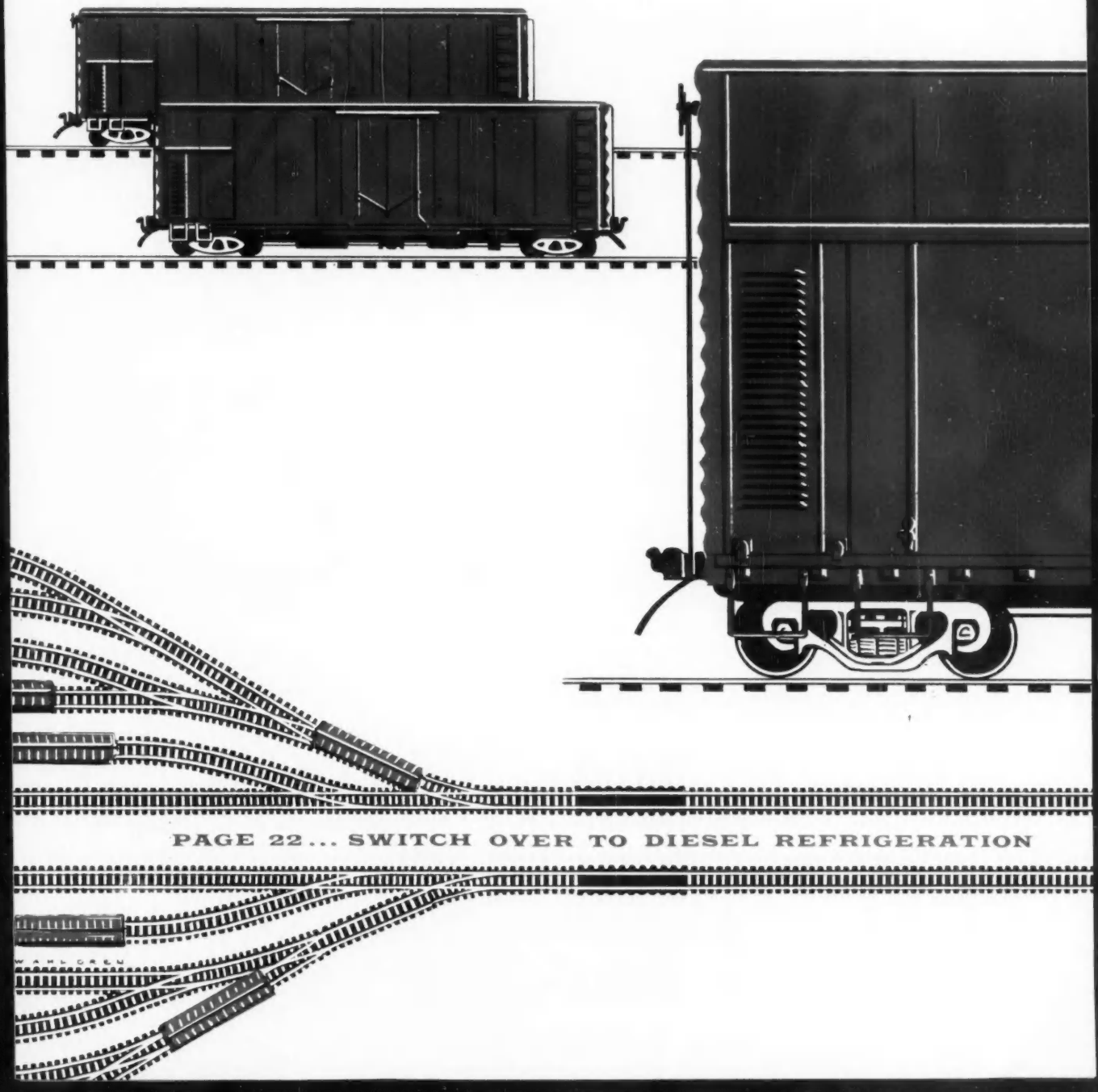
diesel power

AUGUST 1960



PAGE 22... SWITCH OVER TO DIESEL REFRIGERATION

Charles Guard *(left), City Engineer, and* George Williams *(right), Power Plant Superintendent of Lebanon, Ohio...and* G. L. ("Slim") Collar, *Service Engineer for The Cooper-Bessemer Corporation discuss the installation...*

How Lebanon is powering-up to keep costs down with Cooper-Bessemer engines

Here you see the new Cooper-Bessemer LSV-16 gas-diesel engine being moved into the power plant of Lebanon, Ohio to double its present capacity. This is the second LSV to be installed here. After three years' experience with a smaller unit, Lebanon Trustees of Public Affairs know how economical this turbocharged Cooper-Bessemer engine really is!

The new 3200 kw unit, like its 2000 kw C-B companion, will deliver *30% more power* per fuel dollar than units of conventional design in the Lebanon plant!

Both of these LSV engines can operate on either fuel oil or natural gas.

Cooper-Bessemer is prime contractor for the entire new 3200 kw facilities on a turn key basis. It will include C-B En-Tronic Controls.

It will pay you to investigate the performance of Cooper-Bessemer engines and controls to assist in your planning for optimum economy. Call the nearest office.

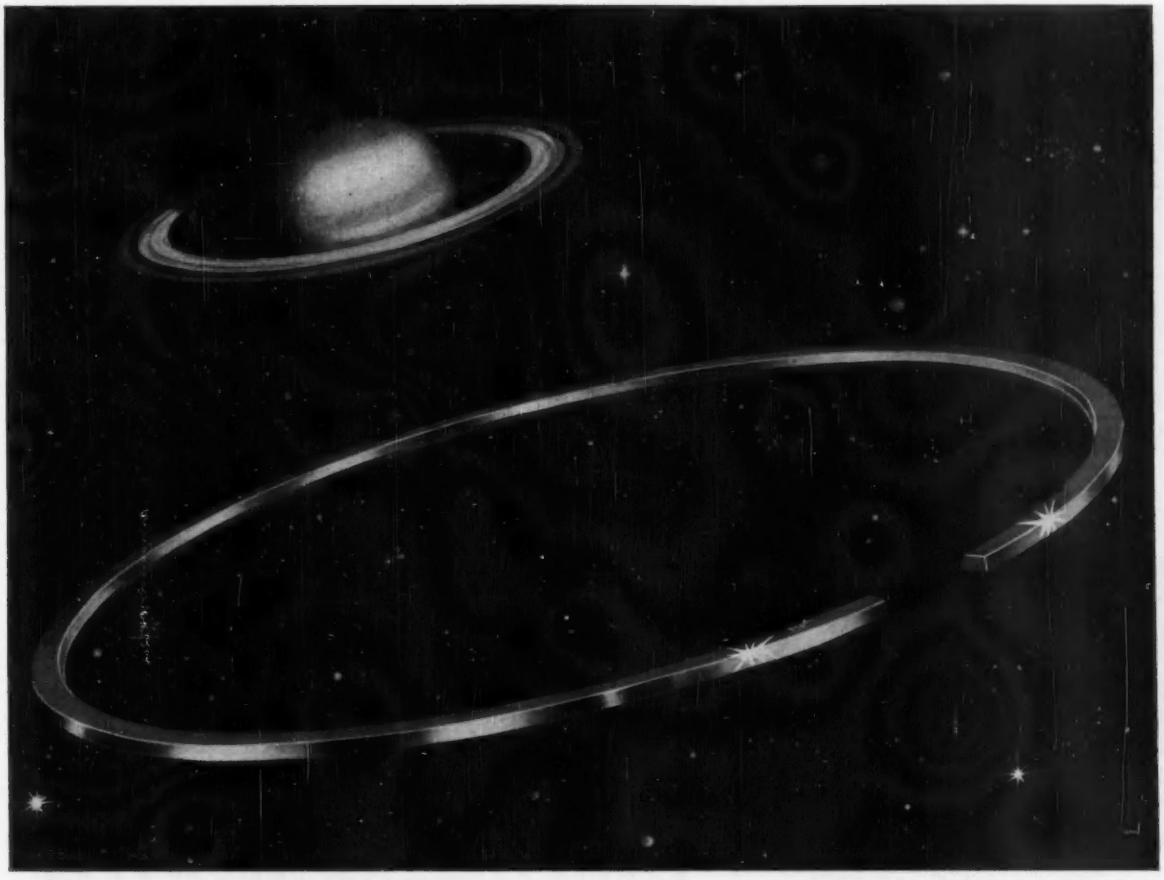
BRANCH OFFICES: Grove City • New York • Washington • Gloucester Pittsburgh • Chicago • Minneapolis • St. Louis • Kansas City • Tulsa New Orleans • Shreveport • Houston • Greggton • Dallas • Odessa • Pampa Casper • Seattle • San Francisco • Los Angeles • *SUBSIDIARIES:* Cooper-Bessemer of Canada, Ltd. . . . Edmonton • Calgary • Toronto • Halifax Stratford • C-B Southern, Inc. . . . Houston • Cooper-Bessemer International Corp. . . . New York • Caracas • Anaco • Cooper-Bessemer, S.A. . . . Chur, Switzerland • The Hague, Netherlands • Mexico City • The Rotor Tool Company . . . Cleveland

Cooper Bessemer

GENERAL OFFICES: MOUNT VERNON, OHIO

ENGINES: GAS - DIESEL - GAS-DIESEL
COMPRESSORS: RECIPROCATING AND CENTRIFUGAL, ENGINE, TURBINE OR MOTOR DRIVEN

For more information write in No. 1



SPEAKING OF LONG-LASTING RINGS . . .

. . . we don't claim that Pedrick compression rings will last as long as the rings around Saturn, but we do say that Pedrick chrome-faced compression rings will give you 2 to 4 times longer life than any non-chrome compression rings.

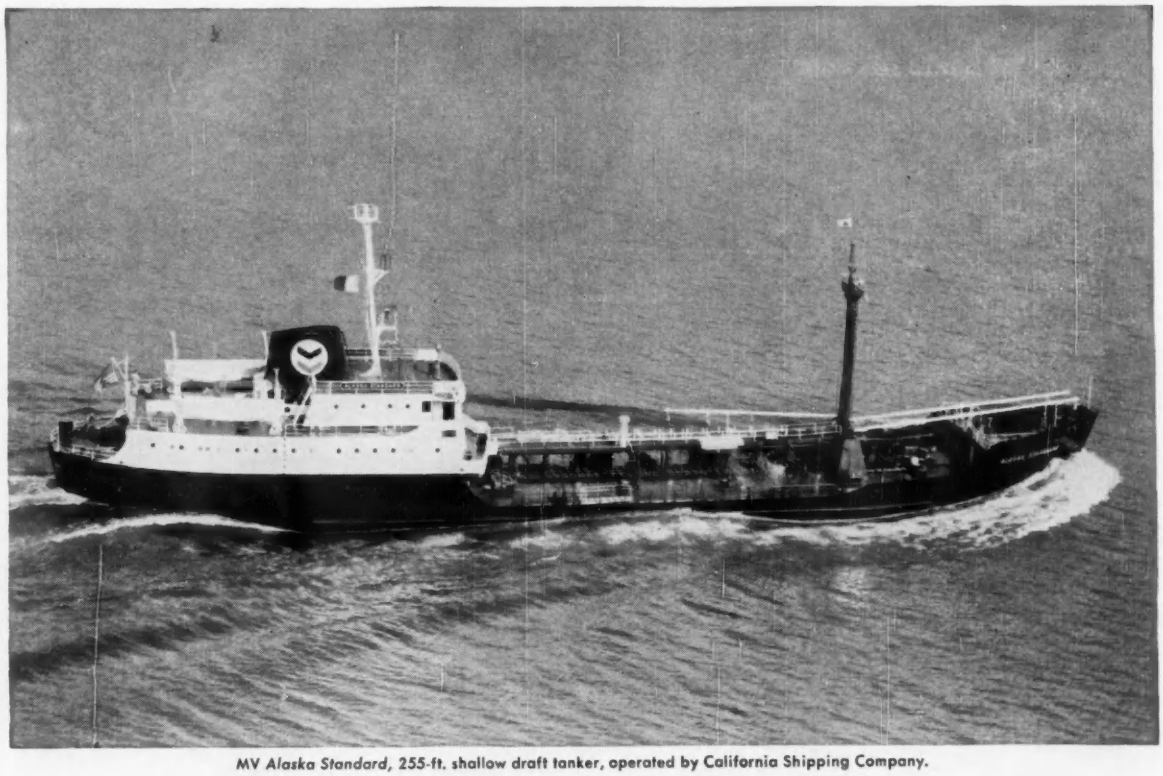
Pedrick's solid chrome facing resists scuffing, abrasion and corrosion . . . withstands high temperatures . . . increases ring life up to four times. Pedrick chrome-faced rings are prelapped at the factory to assure positive and quick seating and minimum break-in time. The use of chrome-faced top compression rings also reduces the rate of wear of all the other rings and of the cylinder wall.

Get 2 to 4 times longer efficient ring life in your engines by using Pedrick chrome-faced compression rings. And, for any or all your ring problems, feel free to consult our Engineering Dept. Write or phone: WILKENING MANUFACTURING Co., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co. (Canada) Ltd., Toronto 2.

Pedrick
PISTON RINGS

PEDRICK PIONEERED *conformable* RINGS FOR BIG-BORE ENGINES

For more information write in No. 2



MV *Alaska Standard*, 255-ft. shallow draft tanker, operated by California Shipping Company.

NORDBERG DIESEL IN NEW ALASKA STANDARD USES DEPENDABLE, ECONOMICAL BENDIX FUEL INJECTION

Serving Alaskan industries with petroleum products, the 255-ft. *Alaska Standard* makes its cargo runs through some of the world's trickiest waters. Navigating shallow draft areas around island shoals, the tanker meets tricky seas and changeable weather.

Bendix* Fuel Injection equipment serves the turbocharged Nordberg diesel engine, which develops 1700-hp at 500 rpm. This equipment assures the dependable performance vital in *Alaska Standard's* kind of service.

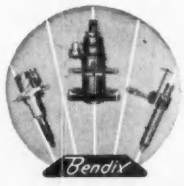
The complete propulsion system which includes the engine, reverse reduction gear and pneumatically actuated shaft brake is arranged for quick response to facilitate rapid maneuvering which is frequently required in Alaskan coastal waters.

Bendix Fuel Injection equipment has repeatedly proved its ability to deliver dependable performance in exacting operations of the *Alaska Standard* type. That's why Bendix is the choice of diesel engine manufacturers, in growing numbers, for their fuel injection requirements.

For full information on this quality equipment, write SCINTILLA DIVISION, THE BENDIX CORPORATION, SIDNEY, NEW YORK.

*REG. U.S. PAT. OFF.

Engine room of *Alaska Standard*. 1700-hp Nordberg diesel has Bendix Diesel Fuel Injection.



Scintilla Division
Sidney, New York

THE Bendix CORPORATION

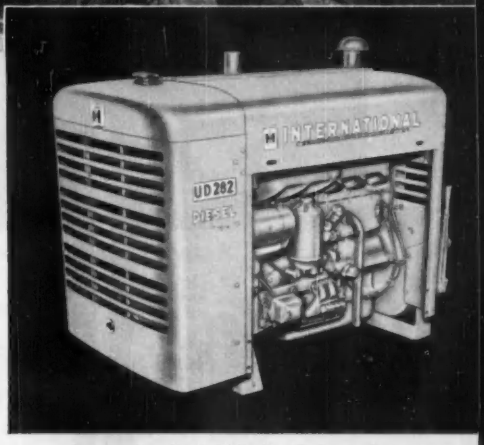
Export Sales & Service: Bendix International Division, 205 E. 42nd St., New York 17, N. Y.

For more information write in No. 3

H. P. Lockhart, Assistant General Manager, Sales, Austin-Western, Construction Equipment Division, Baldwin-Lima-Hamilton, Aurora, Ill.

"On-the-job reports prove that IH power is an excellent choice for our hydraulic crane."

Customer's job records show INTERNATIONAL® Power ideal for AUSTIN-WESTERN Crane



International UD-282 diesel shown here is interchangeable dimensionally with UB-264 gasoline engine.

For their heavy-duty hydraulic crane Austin-Western engineers specified a rugged industrial-type engine, in the 80-90 horsepower class, that would provide dependable power for the boom hoist, yet would operate smoothly and economically at road travel speeds. International UD-282 and UB-264 engines exactly met these requirements and were dimensionally interchangeable. And they gave the customer a choice of either gasoline or diesel fuel. Reports from users show that Austin-Western cranes equipped with International engines are doing outstanding jobs.

When designing your products it will pay you to check International's line-up of diesel and carbureted engines. You will find the rugged carbureted models and instant-start diesels are interchangeable in power and dimensions. And IH power flexibility provides efficient operation through wide variations in load and speed.

Investigate the many advantages available to you by powering your products with International. You have a choice of 35 engines from 16.8 to 385 max. hp, a size to fit any power requirement. For detailed information call or write International Harvester Co., Engine Sales Dept., Construction Equipment Division, Melrose Park, Ill.

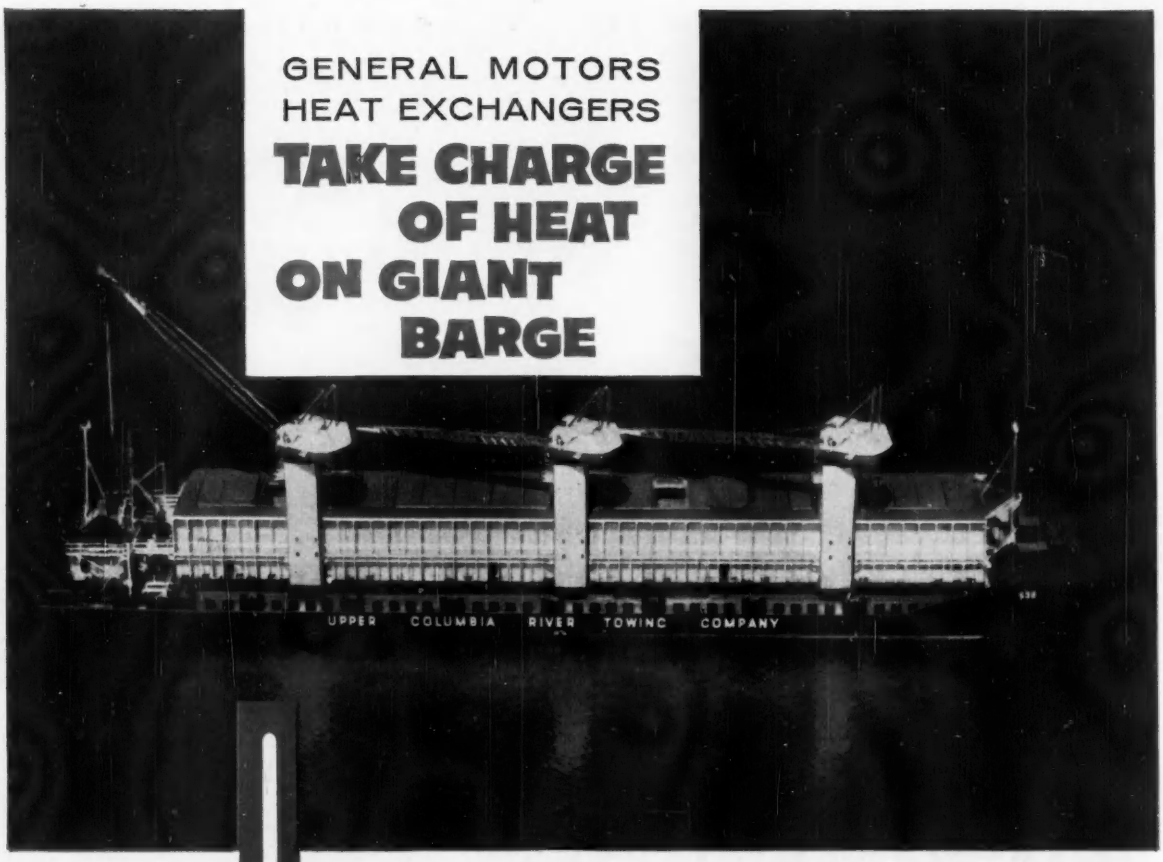
INTERNATIONAL®
ENGINES

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

For more information write in No. 4

GENERAL MOTORS
HEAT EXCHANGERS

TAKE CHARGE OF HEAT ON GIANT BARGE



Harrison Heat Exchangers —Reliable Products of General Motors Research and Engineering.

RELIABLE HARRISON OIL COOLERS SPECIFIED FOR DIESEL POWERED PUMPS AND LOADING EQUIPMENT

The world's largest barge—299′ long, 75′ wide, hull depth of 21′—ranges the Pacific Coast from the Bering Sea to Mexican Coastal Waters! Delivery of cargoes to busy ports demands the ultimate in reliability and efficiency of cargo-handling equipment. The four GM Diesel-driven deep-well pumps have a combined capacity of 14,000 g.p.m. for liquid cargo. Each of the three GM Diesel-driven cranes has a lifting capacity of 25 tons for dry bulk cargo. The barge's lighting and ventilating requirements are handled by GM Diesel-driven generators. And Harrison heat exchangers cool the oil for all of these engines! Harrison—with a half century of experience in the heat-transfer field—assures you of top-quality products that are researched and engineered to control vital temperatures with maximum efficiency. The most advanced industrial, aviation and marine equipment relies on Harrison heat control equipment. If you have a cooling problem . . . rely on Harrison for the answer.

GM HARRISON
TEMPERATURES MADE TO ORDER
AIRCRAFT, AUTOMOTIVE, MARINE AND INDUSTRIAL HEAT EXCHANGERS

HARRISON RADIATOR DIVISION, GENERAL MOTORS CORPORATION, LOCKPORT, NEW YORK

For more information write in No. 5

diesel power

ESTABLISHED IN 1923 **AUGUST, 1960 VOL. 38 NO. 8**

Editor	Brian P. Emerson
Associate Editor	Bruce Millar, Jr.
President	James E. Jones
Publisher	G. Renfrew Brighton
Asst. Publisher	Wilbur W. Young
Circulation Fulfillment Mgr.	Adele Hoppe
Production Mgr.	W. B. Williamson
Art Director	Leonard Wahlgren
Representation	
Mid-West	Frank Wenzel, Dist. Mgr. 605 N. Michigan Ave. Chicago 1, Ill. Rm. 206 Tel: Michigan 2-5050
Pacific Coast	Pugh & Rider Associates 404 Halliburton Building 1709 W. Eighth Street Los Angeles, Calif. Tel: HUbbard 3-0537 Hunter Vinton 16 Crescent Drive Palo Alto, Calif. Tel: DAvenport 5-4815
South-West	The Runnels Company Ralph Runnels 5210 Morningside Dr. Houston 5, Texas Tel: JAckson 4-6633
Great Britain France, Scandinavia	John Ashcraft 9 Curzon Street London, W. 1, England
Germany	Linder Press Union GmbH. Wittelsbacher Alle 60 Frankfurt/Main, Ger.

Subscription Rates

	Single Copies	1 year	2 years
U. S.	75¢	$4.00	$7.00
Canada	75¢	4.00	7.00
Foreign	$1.50	8.00	13.00

Back Issues — Twice Published Price

Diesel Power is indexed regularly by Engineering Index, Inc. and is available in microfilm editions from University Microfilms, Inc., Ann Arbor, Michigan.

DIESEL POWER, for August, 1960, Vol. XXXVIII, No. 8. It is published monthly by **DIESEL PUBLICATIONS, INC.**, Executive and Editorial Offices at **80 LINCOLN AVE., STAMFORD, CONN.** Tel. DAvis 4-2131. Entered as second class matter at the Post Office, Kutztown, Pa., under Act of March 3, 1879.

Copyright 1960, Diesel Publications, Inc.

BPA

editorial

Now Is The Time . . . 9

articles

Today's Diesel Man 18

I-H'S Pusher Dozer 105 20

Rail Riding Diesels Replace Ice Cooling 22

Accessories Broaden Injector Pump Applications 26

GE's 2500-hp Diesel-Electric Locomotive 28

Report on R-B Distributor's Meeting 32

How Interstate Re-Manufactures Injectors 34

The "Hole" Story 36

Connecticut's First Diesel-Powered Cab 38

departments

Highlights 11

News Section 12

News—People & Plants 16

New Products 42

Reader's Service Card 45

New Literature 48

Advertiser's Index 50

a giant needn't speak to be heard...

. . . he need only be a giant.

he need only do the things
that only a giant can do . . .
and he will be listened to.

we have a giant of our own.
his name is diesel.
he is an engine—
a supplier and creator of power.
his jobs are many and varied,
his demands are infrequent and few.

in an emergency
he can work on almost any fuel.
on assignment
he can work almost anywhere at all.

he makes the boats go . . .
towboats on the Mississippi,
harbor boats in Pakistan,
fishing fleets out of Portugal,
tuna clippers off Peru.
in wartime he drove submarines
and landing craft.
today he helps atomic vessels
do their job.

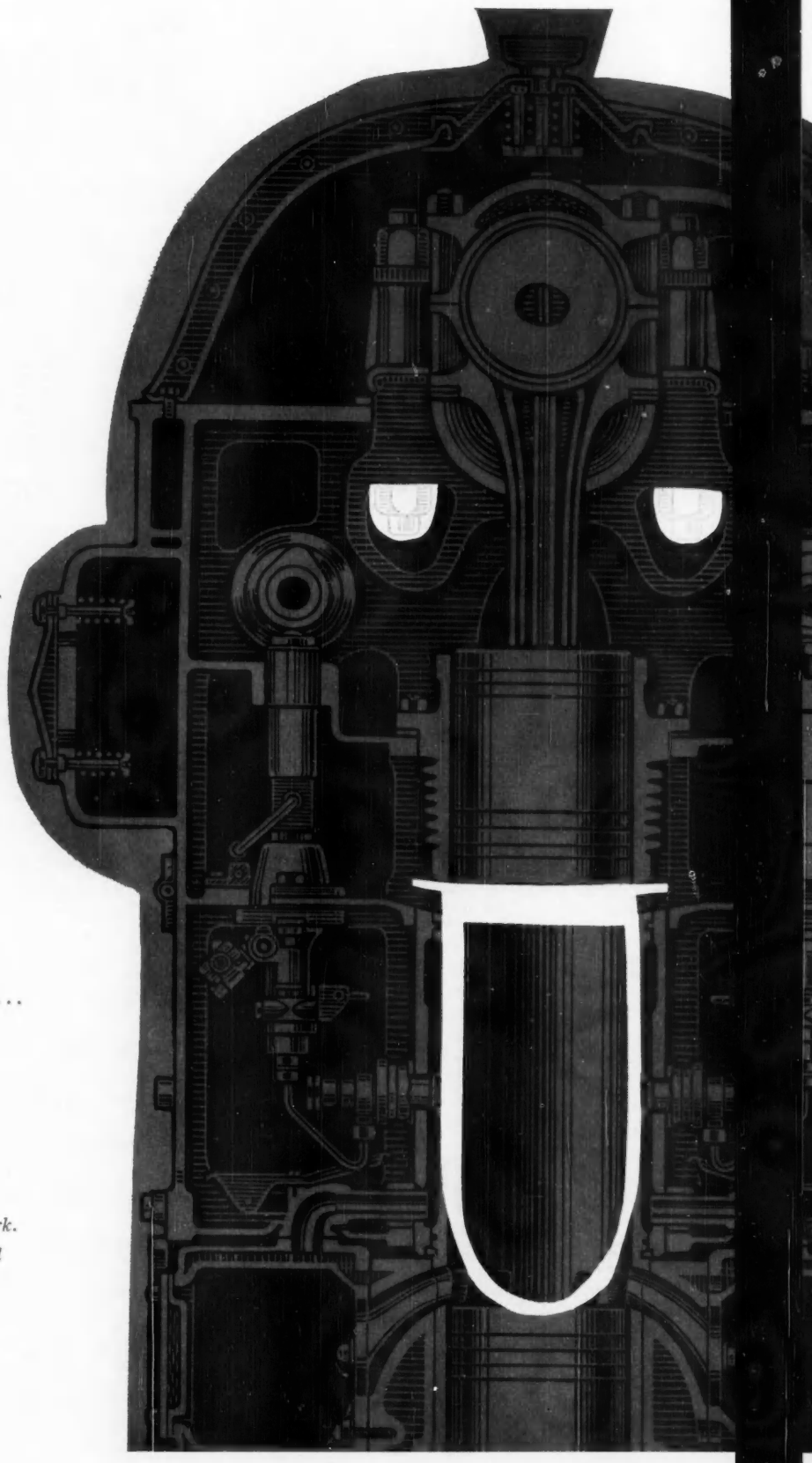
he drives . . .
cement mills in Indonesia,
dredges in Manila Bay,
oil drills in Venezuela,
rigs in the Gulf of Mexico.
he pulls buses, trucks and tractors . . .
locomotives, rock-crushers
and bulldozers.

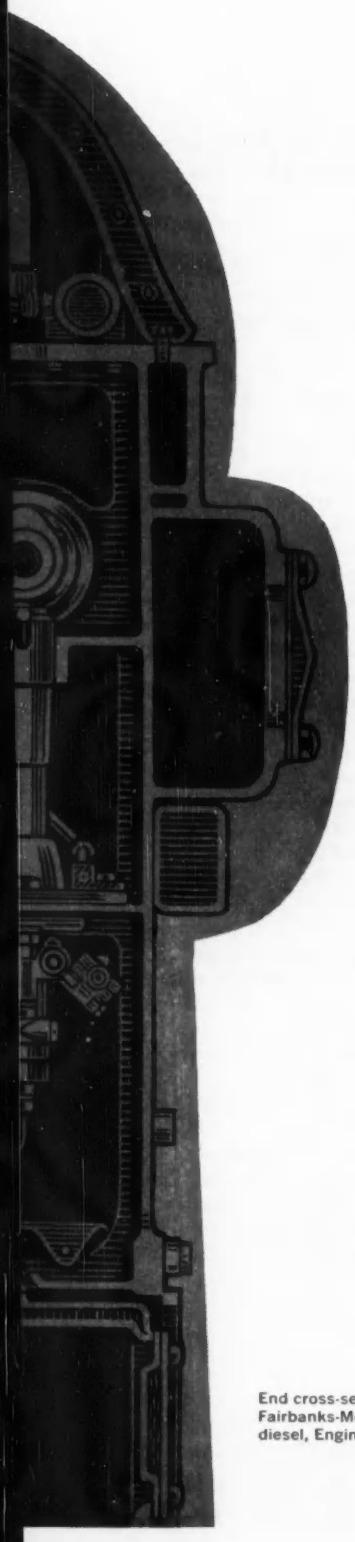
he generates . . .
light for cities
and power for plants,
electricity for homes
and more for hospitals.
he powers
missile stations in Wyoming,
radio stations in Sudan
and emergency stations in New York.

there is no country in the free world
where he is a stranger.

there is nothing he will not tackle
and little he cannot do.

his voice is in his accomplishments
and you hear it every day.





From Beloit to Bangkok—Fairbanks-Morse diesels are known, respected and relied on. They can be tailored to available fuel. They handle heavy loads in short periods of time. And they provide low-cost electricity for almost every situation you can think of. Their minimum weight, lack of vibration and simplicity of construction are further guaranteed by our 24-hour service the world over. There is no other producer of power more universally accepted than our diesel.

If your business demands effective, dependable and economical power—you will be interested in learning more about our complete line of diesel engines.

Write to: Diesel Division, Fairbanks, Morse & Co., Beloit, Wisconsin.

Fairbanks, Morse

A MAJOR INDUSTRIAL COMPONENT OF **FAIRBANKS WHITNEY CORPORATION**

End cross-section of the
Fairbanks-Morse Opposed-Piston
diesel, Engine No. 38D8-1/8

HIGHER PERFORMANCE WITH SMALLER TURBOCHARGERS

AiResearch's new line of high performance turbochargers gives higher air pressures and more flow per size and weight than ever before achieved in the turbocharging industry, while retaining the high standards of durability which AiResearch established in this field.

Designed for the 50-700 hp engine range, the turbochargers incorporate (a) low inertia, low stress, high pressure ratio impellers and turbine wheels, (b) free vortex turbine housings which eliminate nozzle rings and provide higher turbine efficiency.

Other advantages:

Lower Cost—Radically simplified design and high production tooling have significantly lowered unit cost and service requirements.

Faster Response—Lowered inertia of the rotating group has made response almost immediate.

Greater Versatility—Interchangeable compressor components for each basic turbocharger housing permit a perfect matching of turbocharger to the job; and better engine matching further reduces operating cost.

These new, high performance turbochargers are readily adapted to AiResearch turbocharger control systems which insure optimum engine characteristics over the entire range.

World leader in the development and manufacture of lightweight turbomachinery of all types, AiResearch now has more than 35,000 turbochargers in the field delivering nearly 9 million turbocharged horsepower.

Your inquiries are invited.

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

For more information write in No. 7

diesel power

editorially speaking

Now is the time . . .

Statistics are not necessarily dull reading. Read them with some imagination and you can even develop a story. If your business is a contributing statistic, the plot can be strong and moving—strong because you'll feel it way down deep, say, in the pocketbook; moving because you may want to rewrite the script. Take ICC's quarterly statistics on Class I motor carriers, tabulations covering operations of intercity common carriers of general commodities, of special commodities, and those of intercity contract carriers. To show the trend, similar data for the same quarter of the preceding year is given. Let's look at the first quarter, 1960, report. One item is "Operating Ratio" or percentage of total expense to total operating revenue. The higher the percentage, the less for you—and Uncle Sam. Except for one region, ratios are up for 1960, common carrier percentages averaging in the high 90's, contract carriers in the low 90's. In five regions expenses exceeded revenue for this quarter! In most cases revenue dollars are up over 1959 . . . so are miles operated and tonnage hauled. But expenses moved up even faster. Three expense items contributed major increases—"Terminals", "Equipment Maintenance" and "Transportation". We're concerned here with the last two as the type of power used will affect both. To hold down maintenance costs and the part of "Transportation" represented by fuel, get diesels! Higher operating ratios despite increased revenue ton-miles shows that the cost squeeze is getting worse. You can't do much about cutting operating costs such as "Operating Taxes and Licenses" or "Insurance and Safety" but you can cut your maintenance and fuel bills with diesels. Now is the time . . .

B. P. E.

GOLIATH OF OFF-ROADERS. LeTourneau-Westinghouse Haulpak handles payload greater than weight of truck itself. From its 375-hp Cummins turbocharged engine to its transmission and drive, nickel alloys help this rugged hauler breeze through roughest jobs.

How Ni-Resist cast iron helps raise diesel power output...economically

Turbocharging raises diesel power output dramatically. But it also makes the exhaust run hot so that parts made of ordinary ferrous metals crack, warp and scale excessively.

How does Haulpak's diesel avoid this trouble? *With turbocharger casings and exhaust manifolds of Ni-Resist* high nickel alloy cast iron.*

Ni-Resist iron really stands up to hot, corrosive exhaust gases. And it has excellent high temperature strength, high resistance to shock and scaling. Performance records indicate that engine parts of Ni-Resist iron often go as long as 225,000 miles between overhauls.

Get all the facts on Ni-Resist iron. Send for detailed 70-page booklet "A-71". *Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

INCO NICKEL
NICKEL MAKES CASTINGS PERFORM BETTER LONGER

For more information write in No. 8

diesel power news section highlights

WATCH FOR A FORD TILT CAB TRUCK . . . WITH A CUMMINS UNDERNEATH!

Report is that Ford will soon spring its surprise on the truck trade. Their new '61 diesel truck tractor is slated to have an 80-in. tilt cab with Cummins supplying the powerplant. Ford's own diesel truck engine is reported in the works with production still a couple years off.

MORE GOVERNMENT CONTRACTS GO TO WHITE . . .

White Motor Company's Diesel Engine Division in Springfield, Ohio, was awarded a $Million-plus in orders from the FAA for 21 of their 500-kw diesel-generator sets. They're slated to supply power at airway air traffic control centers. Order supplements an earlier similar order. Brings White's Diesel Engine Division's military backlog to nearly $10-million, reports J. N. Bauman, White president.

LIGHTLOAD/SHORTHAUL CANDIDATE COMING UP . . .

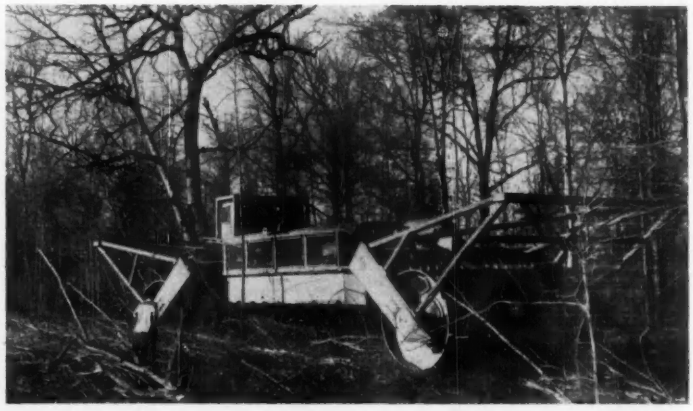
Divco-Wayne Corp. plans to mass produce a small walk-in type door-to-door delivery truck in the 3000-lb. 100-in. wheelbase range. Prototype is currently being tested. Divco says they're "Alert to possibility of diesel powerplant if customers want them in volume." Divco is currently testing many different makes of diesels in their various trucks—Hercs, Mercedes-Benz, Perkins and Triumph, among others.

SEPTEMBER IMPORTANT FOR CONFERENCE, CONVENTIONS, EXHIBITS . . .

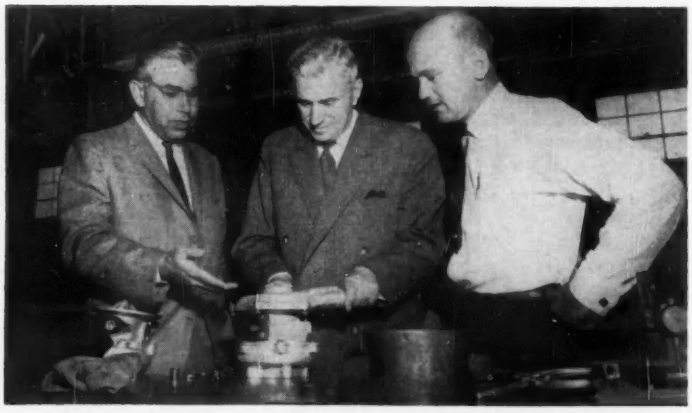
There's a lot happening around the country during September. Here's a brief rundown reminder: September 6-9 sees the 24th Annual Prime Mover Control Conference opening in Rockford, Illinois at Woodward Governor Company's plant. Sessions planned for engineers . . . and maintenance personnel on governing diesels, steam and gas turbines. September 12-14 are the dates for Locomotive Maintenance Officers' Association Annual Meeting, held at Chicago's Hotel Sherman. Sessions on diesel electrical maintenance . . . engine maintenance . . . and material reconditioning are scheduled. September 14-17 down in Raleigh, N. C. finds 300 companies exhibiting at the 2nd Annual Southeastern Show devoted to maintenance and engineering. It's co-sponsored by Maintenance Council of the North Carolina Motor Carriers Association and will feature a wide variety of fleet maintenance exhibits . . . as well as down-to-earth, practical maintenance and engineering classes conducted by N. C. State College. September 22-25 finds us back again at Chicago's Hotel Sherman for the 1960 annual national convention of the Association of Diesel Specialists. There'll be maintenance workshop seminars . . . plus exhibits by today's big names in the diesel field. Looks like ADS's most successful meeting is in the making!

MORE INDUSTRY NEWS FOLLOWS ►

diesel power news section



What Grows Up Most Come Down — at least when Le Tourneau's Electric Tree Crusher rolls through. Couple of General Motors diesels supply dc power for the wheels . . . ac for control systems. Trees up to 18-in. are pushed over . . . mats 3.25 acres-per-hour, ready for easy burning!



Dr. Hans Heinrich (center) came over from Robert Bosch, GmbH, Stuttgart, Germany, for firsthand look at Garrett Corporation's giant AiResearch Industrial Division in Los Angeles. German firm will soon turn out (under joint licensing agreement) AiResearch diesel turbos and control systems. Standing with him are AiResearch's Industrial Division Manager, Wilton Parker, and Chief Engineer, Hans Egli.

Couple of Cats supply diesel-electric power at big West Coast dam on the Columbia River. They're Cat D353 sets . . . powering Curtis Construction Company's 4000-ton-a-day crusher at Rocky Reach Dam site. Completely mobile . . . with its own 2500-gal tank and load-switching gear. Cost of power is cheaper than tapping-in and stringing poles!

NEWS SECTION . . .

RMC Boosts Efforts in Research and Development

Rochester Manufacturing's launched a long range research and development program with an eye to the introduction of new products and mechanization of manufacturing operations. Armour Research Foundation is giving RMC a big assist toward the realization of these plans.

The manufacture of liquid level temperature and pressure gauges has been part of RMC's operation for the past 44-years. Current product lines serve the farm tractor industry, petroleum refining and pipe line operations and gas transmission lines. RMC also supplies component parts for original equipment manufacturers.

RMC of California produces RMC Lindsay gauges, widely used by the aircraft industry and subcontract work of a specialized nature in the instrumentation field and production on commercial instruments.

During the past several months, RMC's West Coast subsidiary has undergone many changes including a new plant in Monrovia, California, for labs and sub-contract jobs. A manufacturing area turns out about 1,000 precision-made Lindsay gauges each month.

RMC of Illinois in Chicago has extended operations in a recent changeover. Warehouse-sales office established to service the Mid-Western farm tractor industry has been expanded to the handling of the complete RMC product line for that market.

Cat Diesels Drive GE Driller Generators On Off Shore Rig

A diesel-electric drilling rig drive package was purchased by Caldrill, Inc., through the Oil Well Supply Division of U. S. Steel for use on Texaco's permanent off-shore platform near Gaviota, California.

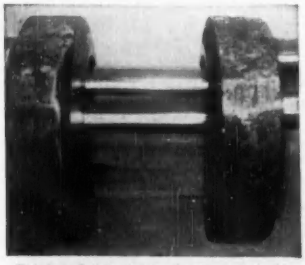
The S-455 drilling rig drive-package includes four GE-752 drilling generators, driven by 500-hp 1200-rpm Caterpillar D-397 turbocharged diesel engines. GE's Locomotive & Car Equipment Department, Erie, Pa. will furnish the drilling motors, generators and control equipment.

THIS CRANKSHAFT JOB NEEDS A SPECIALIST

This is specialized work, rebuilding crankshafts—intricate, exacting, and naturally expensive. It's the kind of work that demands a specialist . . . and we are just that!

We've specialized in rebuilding crankshafts, because since 1916 we've *made* crankshafts. And who knows better than a maker what are the "musts" of a sound, economical repair job. We'll take your worn crankshaft and rebuild it, if salvagable, through the carefully controlled steps of grit blasting, replating, regrinding and thorough inspection. And we'll deliver it back with a guarantee for 100% performance that only a manufacturer-specialist can provide. May we quote on your next job?

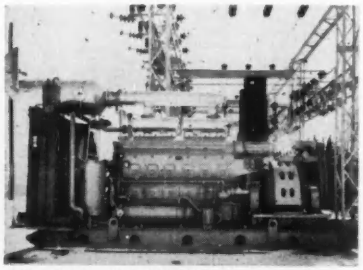
For more details on crankshaft repair write for Bulletin RC-3



This is a finished, repaired crankshaft, after processing by National Forge.

NATIONAL FORGE COMPANY
IRVINE, WARREN COUNTY, PA.

For more information write in No. 9



ALL DAY, ALL NIGHT . . .
Down where the tradewinds blow—in the Bahamas—they ran out of electricity recently. A. G. Schoonmaker leased and rushed these portable surplus diesels to power 750-300-kw sets.

For Safety's Sake . . . A Standby Diesel Generator

Brookhaven National Laboratory at Upton, L.I., has installed a standby diesel electric generator to take over in case of power failure. It will cut in to operate ventilators expelling the gasses that could cause possible explosion of hydrogen or propane gas connected with Brookhaven's 3-billion electron volt atom smasher.

Griffin Equipment supplied the first such protective power unit—meeting the Lab's necessary strict requirements.

E. A. MacDougall, power engineer for the Cosmotron (atom smasher) Department, points out that the large quantities of hydrogen or propane liquids used in the lab's experimental areas and bombarded by protons for test and photographic purposes would be dangerous if a leak occurs under high pressure and either type of explosive gas mixes with air. The GM diesel will provide instantaneous power at all times. The GM twin 110 diesel generator is kept warm constantly by electric heaters installed by Griffin.

Air Cooled Deutz Blows Cement

Deutz's air-cooled F4L 712 diesel is riding on cement tank trucks these days. A brand new application for the F4L. Its job? Blowing the cement — operates compressor at 2750-rpm, 30-hp, 18-psi. Both engine and compressor share a common lube system.

International Diesels Figure in Major Trucking Purchases

International trucks, powered by diesels figured in two major sales recently. Thirty DCO-405 tractors were purchased by Dixie Ohio Express. And 24 were bought by Dan Dugan Oil Transport as part of a fleet diesel conversion program. In the Dugan fleet, the new lightweight tractors are replacement units which will be used, for the most part to pull 9000-gal tank trailers.

The Dixie Ohio units will be used by the common carrier as fleet replacement vehicles in a fleet of 370 trucks serving an area from Buffalo to Georgia and Alabama.

The DCO-405 tractor has a wheelbase of 128-in., a 220-hp engine and ten-speed transmission.

The DCOF-405, purchased by Dan Dugan Oil Transport, is a tandem-axle model, with 220-hp diesel engine, 12-speed transmission, air ride bogie suspensions and 155-in. wheelbase.

It's Time for a Change . . . To Diesel!

You can get two for one on your fuel dollar simply by converting from steam to Diesel. That's the story from The Bullard Drilling Co. which cut daily fuel casts in half in its unit operating in south Louisiana's Little Chenier area. Rig 3, converted to diesel-electric power by Alco Products (Petroleum Equipment Division of Houston) had the following major equipment components: an Ideco "Big Giant" converted drawworks; a 136-ft Lee C. Moore derrick; a 1000 hp Wilson Snyder main mud pump; and a Wilson-Snyder 700 hp auxiliary mud pump.

Typical fuel costs for contractors using rigs with two Alco engines are about $76 per day for an 11,500-ft hole and $84 for a 14,000-ft hole. This is a drastic reduction, according to the manufacturer, over typical gas bills for steam rig operation where fuel costs from $230 to $300 per day.

Ten Diesels Purchased for Use of Armour Lines

Ten Kenworth Trucks equipped with Cummins NH-220 diesel engines have been ordered by Moss and Meadows for lease to Armour Truck Lines, transporters of Armour products.

The Model K-825, engineered for maximum payload in all the states where they will operate, will travel between the numerous Armour plants.

The new trucks are equipped with 86-in. tilt sleeper cabs. Design emphasizes weight-saving to make the highest payloads possible. Moss and Meadows are veterans in the trucking field, and will supervise the Armour operation from their Boise offices.

Compact Drilling Rig, Diesel Powered

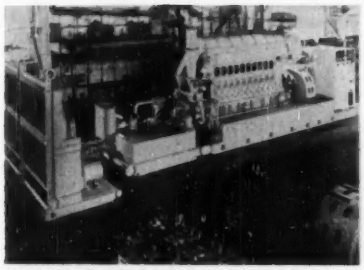
First application of D353 Caterpillar turbocharged 425-hp diesel engines powering GT602 drilling generators goes into operation when Exeter Drilling's crew places into service an electric drive equipped medium rig. It's one of the most compact yet designed in the United States.

A GE-752 drilling motor will be used on the drawworks, while a duplicate will operate the D-550 Continental-EMSCO mud pumps. With the two diesels, the rig design can deliver 700-hp to the mud pumps while drilling.

Equipment Section of GE in Erie, Pa. will furnish the motors, generators and control equipment. They're all to be located on one 40,000-lb skid, 8-ft wide and 29-ft long. Low fuel consumption is expected to provide the lowest possible operating costs.

British Navy Having a Look-See at the American Marc Diesel Outboard

The British Government's ordered two diesel outboard motors from American Marc for tests in connection with their possible use on the many small craft of the British Navy.



PEAKING POWER . . .
This 1000-kw portable power plant supplements Norwalk, Ohio's existing steam plant. Power is provided by a surplus F-M 38D819 10-cyl diesel, supplied by A. G. Schoonmaker.

New Mack Plant For Hagerstown, Md.

A multi-million-dollar, one-story plant with about 1-million sq ft of manufacturing area is slated for completion October 1961 by Mack Trucks.

Over 2000 people will be employed in the ultra modern plant that will replace Mack's outdated Plainfield, N. J. facilities.

SAE International Conclave To Take "Long Look" At Future

More than 15,000 automotive engineers from all parts of the world are expected to attend the largest conclave ever to discuss ground and flight vehicles, present and future!

President Harry E. Chesebrough announced plans for the meeting which will be held in Detroit, January 9-13, 1961.

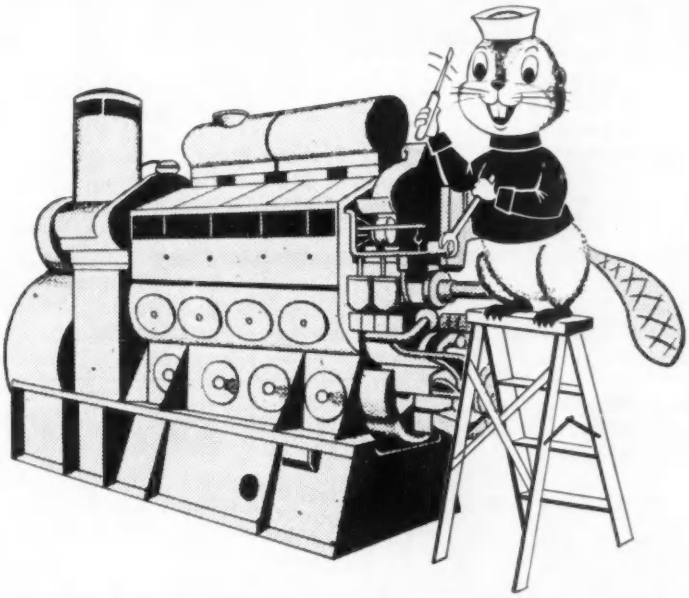
To be called the Society of Automotive Engineers International Congress of Automotive Engineering, the event will feature more than 500 displays by suppliers to the aircraft and automotive industries.

Mr. Chesebrough, who is Vice President and General Manager of Plymouth-DeSoto-Valiant Division of Chrysler Corp., notes that the meeting will bring together key men from the entire world who will reveal the shape of things to come. "Engineers are casting their eyes on such sophisticated concepts as fuels cells and proton and nuclear propulsion. Although these ideas sound like something out of . . . Buck Rogers . . they are getting serious study in scientific laboratories.

A typical session will be an all-day symposium on mass transportation involving 100-200 mile trips in the late 1960's. "Breakthrough" sessions will cover trucks to travel future highways, roadbuilding equipment for preparing the roads, etc.

Our Face Is Red!

June issue of DIESEL POWER carried a news item on Page 21 about Standard Oil Company of California's new "RPM Delo" lubricating oil. Inadvertently, we referred to this new lubricating oil as "RPM Delco". Our apologies to Standard Oil of California . . . and also to Delco-Remy Division of General Motors.



SAVE TIME AND MONEY... LET NATIONAL MARINE KEEP YOUR DIESEL ENGINES, PUMPS AND COMPRESSORS ON THE JOB!

For annual maintenance and overhaul of your diesel engines, compressors and pumps, count on National Marine. We'll rush trained experts and replacement parts to the scene . . . by air, if necessary. You'll get urgently needed productive equipment back in service with a minimum of down-time, and yearly maintenance costs will stay at rock bottom. Call, write or wire for full information on our maintenance and repair service.

ENGINEERING SALES AND SERVICE DEPARTMENT
NATIONAL MARINE SERVICE, INC.
800 DELMAR AVENUE • HARTFORD, ILLINOIS
Telephone: (St. Louis) CHestnut 1-6358
General Offices: 21 West Street, New York 6, N. Y.
MEMBER OF THE AMERICAN WATERWAYS OPERATORS, INC.

For more information write in No. 10

A. E. Bigelow

J. G. Rongitsch

Hercules Motors Appointments

A. E. Bigelow has been named manager of the merchandising department, **Hercules Motors Corp.**, supervising service parts sales for the company.

A graduate of Wittenburg College, Mr. Bigelow has over 25 years of experience in marketing and commerce. He's been with Hercules for several years.

J. G. Rongitsch was appointed assistant to the president, having served as material controller and director of supply and inventory with Hercules, following 18 years of association with International Harvester.

R. W. Newton, named director of purchases, has been with Hercules since August, 1959. Previous to this, he was with Conklin Forging and Ford's parts operations.

Atlas Plant Expansion Continues at Fostoria

Atlas Crankshaft, a subsidiary of the **Cummins Engine Co.,** has purchased a 45-acre industrial site at Fostoria, Ohio. Atlas makes grinding and heat treating crankshafts for heavy and light industry in two other large plants in Fostoria.

L. E. Nelson

American Marc Appoints Executive Sales Veep

Lawrence E. Nelson, formerly vice president, Chrysler Corporation, has been appointed executive vice president-sales, **American Marc.** He will head advertising, promotion marketing and sales for the company.

Mr. Nelson's appointment by **W. Denis Kendall,** president of American Marc, is in line with the company's policy to build a management team of experts in the field. He has been associated with the Chrysler Marine and Industrial Division, Ford's Dealer Development Division and most recently executive director of the Chrysler sales staff.

FREE to Every Shop Operator

- Diesel Compression Testers
- Nozzle Testers for American Bosch, Caterpillar and Bendix Nozzles
- Cummins Injector Tester
- International Harvester Injection Testers
- General Motors Injector Testers
- Injection Pump Calibrating Stands
- Nozzle-Injector Cleaning Tools and Lapping Blocks
- Engine Overhaul Stands
- Engine Removal and Parts Dollies
- GM 71 Engine Tools

76 Pages—275 Illustrations
56 Engine Reference Tables
26 Parts Lists

SEND COUPON NOW

BACHARACH INDUSTRIAL INSTRUMENT CO. • 200 N. BRADDOCK AVE., PGH. 8, PA.

Send us FREE copy of your Diesel Shop Manual AD54

We are: ☐ Fleet Operators ☐ Injection Service Shop ☐ Diesel Manufacturers ☐ Parts and Engine Distributors

NAME_____

COMPANY_____

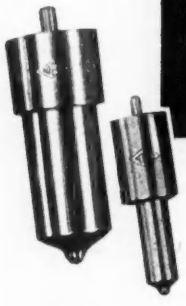
STREET_____

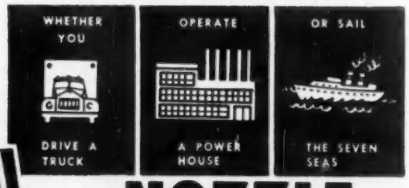
CITY and STATE_____

AD-15

For more information write in No. 11

YOUR ENGINE IS AN *Expensive* PIECE OF EQUIPMENT...





THE **NOZZLE** IS THE HEART BEAT OF THE ENGINE and DESERVES THE BEST

These trouble free ADECO nozzles are made in the U.S.A. of erosion resistant steel, giving you better performance and more operating hours.

AVAILABLE AT MOST SERVICE STATIONS
OR WRITE ADECO FOR INFORMATION

ADECO PRODUCTS, INC.
5435 NORTH WOLCOTT AVENUE
CHICAGO 40, ILLINOIS

MANUFACTURES OF ADECO FUEL INJECTION SYSTEMS

For more information write in No. 12

Truck Pistons come CLEAN with LIX CLEANERS
For carbon-encrusted pistons or ANY diesel cleaning problem, there is a Lix Cleaner that will DO IT BETTER and SAVE YOU MONEY. Lix Cleaners soak away every bit of grime, grease and burned-on carbon quickly and thoroughly, with absolute safety to workmen. All metals can be cleaned in the same tank at the same time, meaning more parts cleaned per dollar invested!
There is a LIX Cleaner for your diesel-cleaning job. Write or phone for a no-obligation demonstration.
THE Lix CORPORATION OF MISSOURI
WAREHOUSES AND OFFICES:
300 West 80th Street • Kansas City, Missouri
201 Railroad Avenue • Corona, California
82 Wall Street • New York, New York
Address Department 30
(2655)

For more information write in No. 13

KIENE®
DIESEL
PRESSURE
INDICATOR
gives compression and firing pressures faster
SIMPLE
RELIABLE
COMPACT
KIENE
K-100
Send for Bulletin K-100
The Model K-100 Kiene Pressure Indicator accurately measures compression and firing pressures — assures the proper maintenance of diesel engines — helps prevent costly down time. Only one moving part — no friction or inertia effects — no complicated adjustments.
KIENE DIESEL ACCESSORIES, INC.
10352 PACIFIC AVE., FRANKLIN PARK, ILLINOIS

For more information write in No. 14

AMF-Beaird to Make and Sell The Maxim Silencer

J. B. Beaird Co., a wholly owned subsidiary of **AMF**, has added the manufacture and distribution of **Maxim Silencers** and heat recovery units to its lines. Purchase of the **Maxim Division** from **Emhart Manufacturing** has made it all possible. Maxim engineers, **Donald Bradford, Allen Pease** and **James Stewart** have joined the Beaird staff and are on hand, facilitating the transfer of the specialized machinery used in the production of the silencers.

Ranging in size from the midgets for home lawn mowers to the 58,000-pounders that control jet engine exhausts such as the one in use with a U. S. Navy F8U Fighter, the Maxim line of silencer equipment includes hundreds of designs for industrial engines, ships, high pressure relief valves, etc.

Beaird is well known in the oil, gas and petrochemical industries. The sales agency arrangement remains the same, for the present, with the silencers sold on a world-wide basis through independent manufacturers' agents. Implementing sales of the Maxim products will be the newly created Maxim and LP-Gas Equipment Sales Division under **Richard Meisenbach.** Aircraft silencer sales continue under **Lee Doyle** who comes over from the Maxim organization.

Lengor's Simplex Kit To Be Represented In West By Cost Reduction Activities

Lengor, Inc., manufacturer of the patented **Simplex Portable Oil Testing Kit,** has named **Cost Reduction Activities,** business efficiency counselors, as sales representatives in the West.

The Kit, developed and produced exclusively by Lengor, is a preventative tool permitting accurate, on-the-spot laboratory-type analysis of engine oils. If the engine oil's dangerously contaminated, the kit flys a warning signal allowing for oil and filter changes based on analysis, not guesswork.

No expert is needed to make the test . . . can be done in five minutes for about a nickle a sample.

Fairbanks, Morse Appoints . . .

• **H. E. Hanson** was named Vice President of **Fairbanks, Morse & Co.** by the Board of Directors at their April meeting. He was also appointed as General Manager of the Beloit Wis. Division. He has been with the company since 1934 moving up through the Diesel Sales Department.

• **Ervin L. Dahlund** has been appointed General Manager of the D.C.L. Group (Diesel Engines, Compressors, Locomotives).

• **William O. Wright,** who began at Fairbanks in 1940, was recently made District Manager of the Pittsburgh office. The appointment follows his service as Diesel Department Manager at the Chicago Branch.

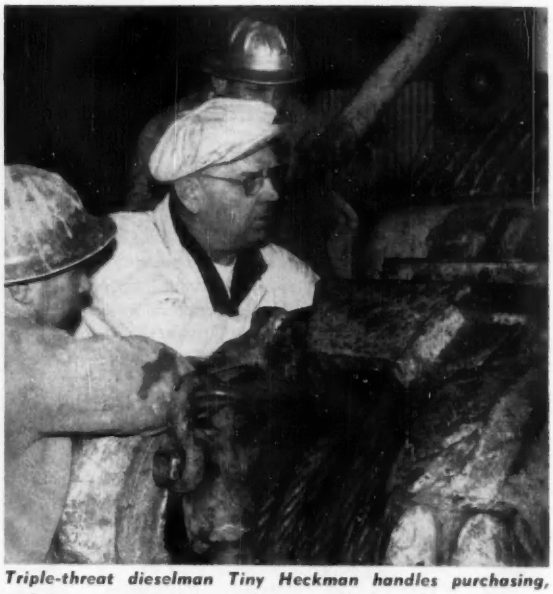
• **Robert Aldag** was promoted to the position of Manager of Locomotive Product Sales.

• **Hugh Donaldson** was advanced to Central Regional Manager, Locomotive Product Sales, Chicago headquarters.

• **E. J. Phillips** was promoted to the position of Eastern Regional Manager, Locomotive Sales, Fair Lawn, N. J.

Today's Diesel Man...

Story and photos by
Paul B. Harder



Triple-threat dieselman Tiny Heckman handles purchasing, maintenance supervision and new product analysis.

"Our biggest job is building roads!" Faye Stewart jolts most lay observers with this observation. He's vice president of Bohemia Lumber Company, a firm engaged in felling virgin timber out in the Pacific Northwest near Culp Creek, Oregon.

By this, he means its the biggest job after management has set up a complex of related manufacturing operations necessary to put to profitable use every part of the tree from the root to the fir cone, from bark to pitch.

"To stay in business we have to manufacture plywood, sell finished lumber, find markets for our chips and are now trying to figure a way to extract by-products from the bark. And even taking all of this into consideration, road building is a lumberman's biggest expense and his most consistent source of ulcers."

For every 2-million board feet of lumber pushed through Bohemia's mill, Faye has to build a mile of road. At 7- to 8-million board feet a month, this adds up to a lot of dirt moving.

In addition to 5000-acres of virgin timberland owned outright by Bohemia Lumber Co., the firm also cuts 60-million board feet a year from surrounding government timberland.

"It's getting into the timber—building roads that meet our needs and government requirements—that takes the time and money and equipment," comments Faye Stewart. "Like most firms, we own our own equipment, build our own roads."

Top man for tough job . . .

It didn't take Bohemia Lumber long to find that a lot of money could be lost through poor equipment maintenance. It hedged against this by hiring a man who knew diesel-powered construction equipment and had the necessary "knowhow" to grasp the lumbering industry's unique features.

Nodding toward a glassed-in office to the rear of the 150-ft long modern repair shop, Faye Stewart comments, "If someone really wants to find out something about the lumber business these days, one of the best places to find the answers is from a man like Tiny Heckman. As shop foreman, he knows just about as much about what's going on, either here at the plant or back in the woods, as anyone in the organization."

Faye Stewart
V.P. Bohemia Lumber Co.
Culp Creek, Oregon

Competition has forced the lumber industry to dig its profits from material that was considered waste 15 years ago. We're not only trying to salvage every penny in sales, we're also trying to shave pennies off cost of operation. It's in saving these pennies that Tiny Heckman fills a need. He's on top of the equipment situation and through smart maintenance and shrewd purchasing keeps our total equipment outlay in line with gross income.

Tiny wasn't in his office. I just missed him at the administration offices . . . finally ran him down at the shop five minutes later.

"Between finding the supplier, buying the part and then supervising fixing the equipment, I keep myself running," laughed Tiny. "It sometimes makes you hanker for the days when you only worried about the piece of equipment you were operating, and even then forgot about it at quitting time.

Tiny explained his responsibilities by nodding toward row of equipment in various stages of repair in the shop. "My job is to keep these monsters running—keep 'em running full blast, full time."

Where diesels get their roughest test . . .

Tiny, whose heavy construction equipment experience stretches back to the early days of dieselization in

Diesel "heel-boom" stacks big 8-ft diameter, 40,000-lb logs on Mack diesel.

the '30s and ranges from oil field pipeline work in Texas to Alcan Highway construction in Alaska, reports that equipment used in the lumbering industry consistently receives tougher treatment than that experienced in any other field.

He supports this by noting that a D-9 Cat used in their road construction work went through 16 dozer cable control units in one year. Even the heaviest truck chassis have to be strengthened to stand the twist of the mountain work.

"Our road-building operation goes on full-time during our 9-month season. Most of it involves rock work —blasting and ripping. All of it is along the face of mountains where our 10% grades have to be cut into the face of slopes of 100% or steeper!"

To handle this work—to continually push through three to four-miles of road each month—Bohemia Lumber maintains two D-9 Cats, two D-8's, three International TD-24's, a TD-14, an Eimco dozer, two diesel road scrapers, a tractor-mounted rock drill and two diesel rock shovels. This is in addition to the 14 log trucks, 17 pickup trucks, diesel-powered "yarders" for snaking fallen logs to the loading site and loading shovels modified for log work.

It takes a crew of 15 men to keep Tiny's trucks, tractors and related logging equipment in operation. And Tiny is right in the middle, supervising major repair work as often as not. As a former operator, he has the gift of being able to tell by sound and by feel when something is amiss with Bohemia's heavy equipment.

"GM-powered Eimco is going to make us a lot of money here in the woods . . . you'll see a lot of 'em in a few years!"

Purchasing is part of his job . . .

Tiny also assumes major purchasing responsibilities. Hundreds of items—from cotter pins to crankshafts, from radiators to rear ends—that are needed to keep this multi-million dollar operation running smoothly must be approved by Tiny.

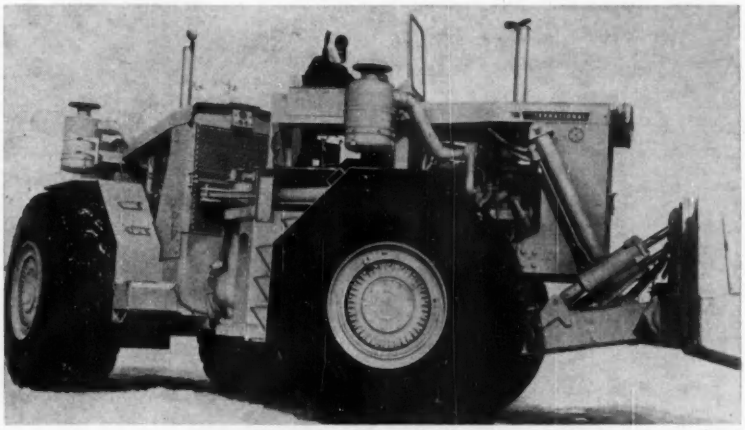
He discusses the products with salesmen, follows industry developments through such trade publications as DIESEL POWER. He is part of a small group of company administrators involved in making decisions on acquisition of major pieces of equipment such as new trucks and tractors. Like his opposite number in competitive firms, he tackles these responsibilities because he is the only man with the diversified mechanical knowledge capable of making the right decision.

"The only way we can stay even in this business is to try to stay ahead," explains Tiny. "We're always looking for two things—one piece of equipment that will do what is now being handled by two . . . and parts and equipment that will last longer than similar equipment

(Continued on page 20)

I-H's Pusher Dozer 105:

Long Way From Pick 'N Shovel Days . . .



Runs forward or backward . . . driver's seat revolves!

Pointing up the trend toward bigger, more productive machinery is this giant 75-ton, 375-hp twin-engine earthmover from International Harvester. It's really two tractors in one, coupled in the middle for greater maneuverability. It wields a 14-ft, 8-ton blade and there's a 1-ft thick pusher plate behind. Operating in either direction with equal ease, I-H's Pusher Dozer seat, steering wheel accelerators and brakes are all turret-mounted. Changing directions, operator merely kicks a release . . . and around spins the turret. Fast on its feet, PD-105's top speed is 21-mph . . . and, thanks to its hydraulically-operated "frame steering", the 105 actually turns inside a Cadillac! It's transmissions are single-stage, torque converter-driven. Still in experimental stages, it's currently in action on a midwest road-building project—push-loading and dozing at high speeds.

Today's Diesel Man . . .

(Continued from page 19)

being used by our competitors.

"By the most intensive kind of preventive maintenance we're able to get longer life from our equipment than most firms. By watching everything that comes out on the market, we're sometimes able to get a jump on the rest of the industry in the introduction of new machinery."

As an example of what it means to get a "jump" on the industry, Tiny and Faye report on the success they're having with an Eimco tractor on road work. The General Motors-powered crawler is smaller, lighter and considerably less expensive than crawlers formerly used for pioneer road work. Its automatic transmission—and a gearing feature permitting one track to operate in reverse while the other moves forward—gives the crawler a speed and operational flexibility that is indispensible to fast work on steep slopes and in tight quarters.

"This tractor is new to the woods," remarks Faye Stewart. "It's going to make us a lot of money and you're going to see a lot of them in our industry within a few years. Tiny's evaluation of the mechanics of the critter and our demand for faster maneuvering, all at less cost, influenced the decision to buy this crawler."

It's not enough just to know that they have the best equipment. Bohemia Lumber's administration has given Tiny the added responsibility of making sure that the equipment stays in the woods, not in the shop.

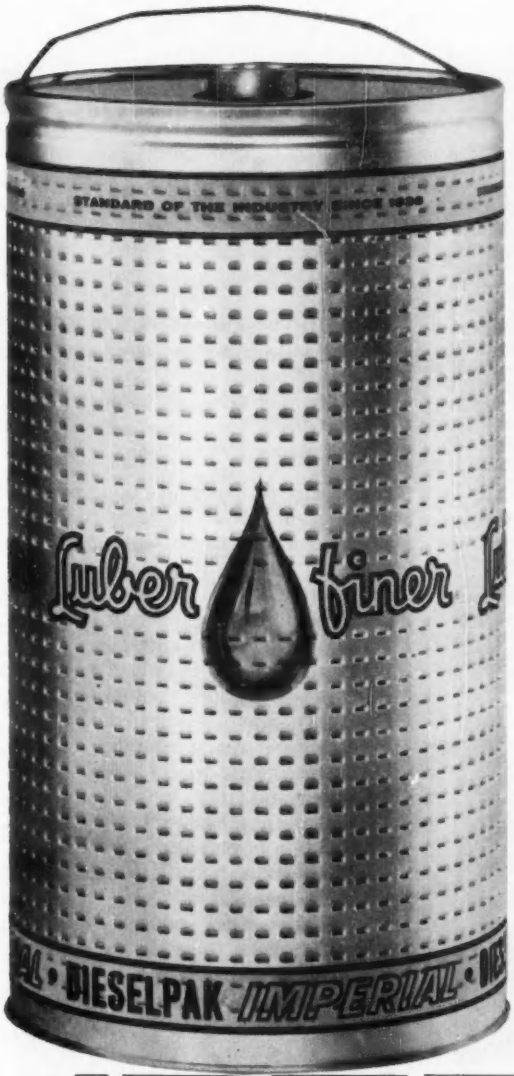
"I'll talk to anyone who thinks he has something that will do the job we're presently doing better, quicker or cheaper," remarks Tiny. "We're always looking for something new, something better. At the same time, I've got to make sure about replacements. This is our biggest problem, no matter what kind of equipment we're looking at. If replacements aren't readily available, the equipment is a liability, no matter how good it is."

This is a pet concern of Tiny's and he notes that it is a common complaint of other equipment men in the lumbering industry. Fast, convenient and consistent parts availability is so important that it can influence purchase of equipment or a component even though another make, not so supported, would serve their needs better.

Profits Depend on Dieselman Heckman . . .

It's easy to see, therefore, that when Tiny's responsibility includes keeping a wide range of heavy construction equipment at work for 9-months at a time deep in the woods miles from Bohemia's shop, he must logically have some say in purchasing decisions of major equipment. He must similarly be vested with the responsibility of deciding what tools, supplies and replacement parts are to be kept on hand.

"We expect Tiny to make these decisions as a natural course of his job," explains Faye Stewart, "Our industry runs on wheels and tracks that are driven by intricate mechanisms and high-powered diesel engines. Tiny is hired for the sole purpose of helping us buy the right kind of equipment for our job and then seeing to it that it stays on the job under the worst kind of operating conditions."



the new word for the world-famed leader in replacement packs

IMPERIAL MODEL

DIESELPAK®

Imperial DIESELPAK with exclusive filtering process, patented media and superior performance effectively removes solid and colloidal impurities from H.D. compounded oil for 7,000 to 12,000 miles of normal diesel truck operation. When you consider maintenance cost per mile, the Imperial model DIESELPAK is the most economical oil filter replacement pack you can use—regardless of price.

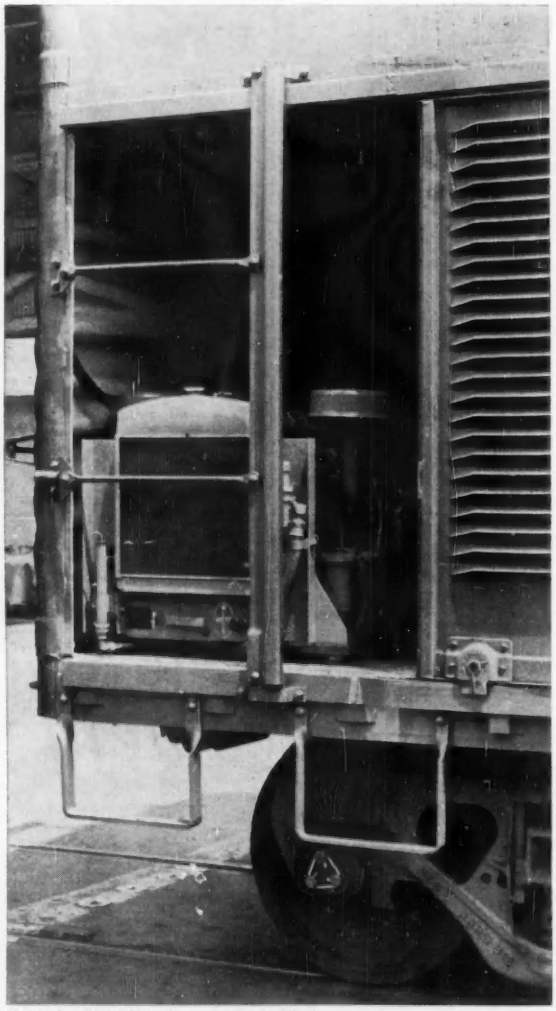
***ALSO THE NEW REGULAR* DIESELPAK®**
...for maintenance schedules calling for frequent oil and pack changes (4,000-7,000 mile)
GENUINE DIESELPAK PROTECTION
LOW INITIAL COST

Luber-finer INCORPORATED
2514 So. Grand Avenue, Los Angeles 7, California

For more information write in No. 15

Rail-Riding Diesels Replace Ice Cooling

Witte's 100RDA produces more cold for less cost, runs equivalent 4 coast-to-coast trips unattended!



Witte's 100RDA is reason behind reefer's new louver door look.

Diesel-electric power is taking over railroad reefer car refrigeration just as surely as it took over from steam power in locomotives. Reason? Performance demands, including those in the area of costs, on today's mobile refrigeration are far beyond the capabilities of ice-cooled units, in fact, beyond that of some earlier mechanical refrigeration units.

Mechanical refrigeration of railroad produce cars became a reality—though somewhat tentatively—nearly a decade ago when Pacific Fruit Express and other lines experimented with prototypes of today's equipment. While these early trials showed promise, they similarly underscored need for continued research into mechanical refrigeration—research that subsequently initiated design of engines, generators and compressors in response to the railroads' specific needs.

To be practical and also competitive with other refrigerated carriers, railroad mechanical refrigeration units must meet these performance demands:

1. Frozen food service (0°F) can be obtained when ambient temperature is 70°F or below.

story and pictures
by Paul B. Harder

Row upon row of Witte 100RDA diesel-electric units wait their turn for installation at PFE's Southern California shop.

2. Must maintain straight-line temperature control.
3. Be capable of both heating and cooling from the same power source.
4. Have low over-all operating costs.

Prime movers as well as the rest of the "package" must also have the following mechanical requirements:

1. Adequate power—no more, no less.
2. Ruggedness compatible with railroad service conditions.
3. Dependability, simplicity and safety.
4. Accessibility and ease of servicing and maintenance.
5. Ability to run for long periods essentially unattended.
6. Have low noise level and low vibration.

This imposing list of requirements has been met. Let's see how this was done by taking a look at some late production models.

PFE's Modern Reefers

At Pacific Fruit Express shops in southern California, first units of an order for 1000 mechanically- cooled reefers are taking shape—some are already in service. These and others to come will supplement—and eventually supplant—over 20,000 ice-cooled units once thought to be as indispensable to railroading as water-towers and roundhouses.

To the layman watching a string of orange cars roll across the desert there will be little noticeable difference between the new units and the "fruit cars" he's seen for 40 years. But to railroad men—and diesel men close to developments in mechanical refrigeration—the tip-off will be the small louvered door at the end of each 50-ft car.

Behind the door is a 4-ft wide compartment running the width of the car. In it is a small diesel driving a 10-ton capacity refrigeration unit.

To the initiated, the door also tells something of the cars. PFE has designed and constructed them to permit use of a minimum-sized engine-generator-compressor unit and take fullest advantage of their capabilities. Cars are completely insulated with 7-in. fiberglass on the walls, 10-in. fiberglass on the ceilings and 7-in. styrofoam under the floors. Doors, too, are specially insulated with plastic materials and include heavy seals to prevent heat loss. In-car dividers permit less-than-carload consignments to be isolated.

Overall design is indicative of a trend. Use of the latest in insulation techniques and reliance on diesel dependability permits use of a smaller-capacity unit than was thought necessary in the past. Where 20 to 25-kw units were generally used, a 12½-kw engine-generator set is now adequate. Attractiveness of lower first cost and subsequent operating costs, plus proven ability to do the job, gives the nod to the smaller diesel-powered units.

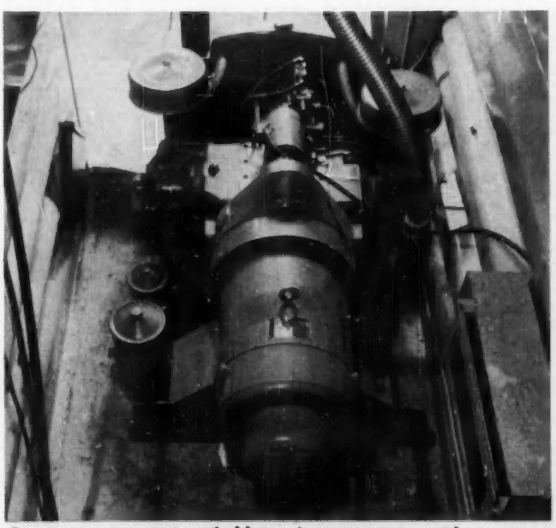
Witte's 100RDA

Of the 1000 reefers being built, 700 are powered by Witte's 100RDA 19-hp 4-cycle diesel with two cylinders horizontally opposed. Bore and stroke are both 4-in., giving a 100-cu in. displacement. At the rated continuous speed of 1800-rpm, piston speed is only 1200-fpm.

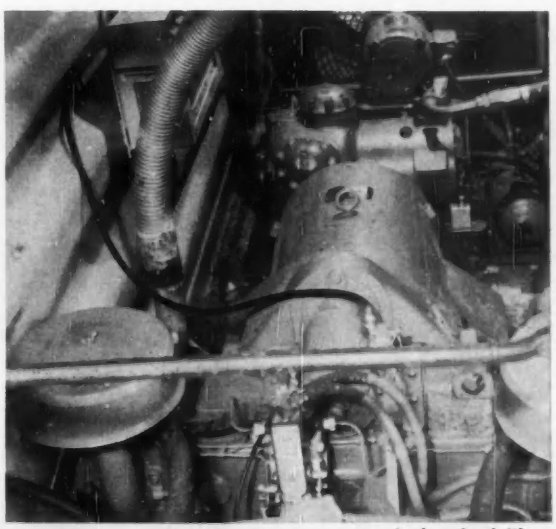
Witte tailored their engine-generator set with the railroads' specific requirements in mind. For example, the unit may be required to run for days—even weeks—without servicing attention while holding as much as 100,000-pounds of food at the desired temperature, anywhere from zero or below, to 70°F.

Design of the lube oil system is such that there is adequate reserve for 1200-hr operation without make-up or changeout. The filtering system, both full-flow

(Continued on page 24)



Compact compartment holds engine, generator and exciter with room to spare . . .



. . . Batteries, starting motor, fuel and oil filters are all easily accessible.

Rail-Riding Diesels . . .

(Continued from page 23)

and bypass, was designed for the same service period, roughly equivalent to four trips coast-to-coast.

The horizontally-opposed cylinder configuration is well suited for this operation. A good deal of buffeting is inherent in railroad operation, normally and especially during "humping" operations. The low profile held overall height from the bottom of the skid's vibration isolators to the top of the radiator to under 32-in. Center of gravity, important when heavy shocks are encountered, is roughly 17-in. above the floor.

Opposed-cylinder design also has the advantage of inherent balance. Starting with low vibration, oversize rubber shock mounts under the steel skid were insurance that little if any vibration would be transmitted to the refrigerated area. This is desirable since with vibration, some perishables in ripened condition could be "shaken down" or "compacted".

Service life was considered in the design and actual service has shown that the engine should not require major overhaul before 15,000 to 20,000-hr continuous service or about four to five-years in this application. Then consideration was given to cutting costs when inevitable major overhaul became necessary. Readily replaceable items such as wet-type liners, precision-type bearings, valve seats and guides were used. Equally important, physical arrangement was such as to give ready access for necessary work.

This is true also for servicing. Accessory items and engine components most liable to require servicing are located at the top or sides for easy accessibility. Carrying this further, routine servicing can be performed from outside the car. For example, lube oil can be checked by simple dipstick and oil added if needed. Two 250-gal fuel tanks under car can be filled.

Companion-piece to the diesel is a direct-connected 12½-kw, 230-v, 3-phase, 60-cycle generator. It has no brushes to wear and requires no external voltage regulator with moving contacts. Its exciter is also direct-connected. This unit, matching the diesel in service life and dependability, provides all the electrical power required, including power for the compressor, the condenser and evaporator fans, defrosting equipment and car heaters.

An added function is battery charging. Rather than run a generator from the engine to charge starting batteries, the job is done by a charging rectifier taking its power from the main generator. Simpler and more reliable.

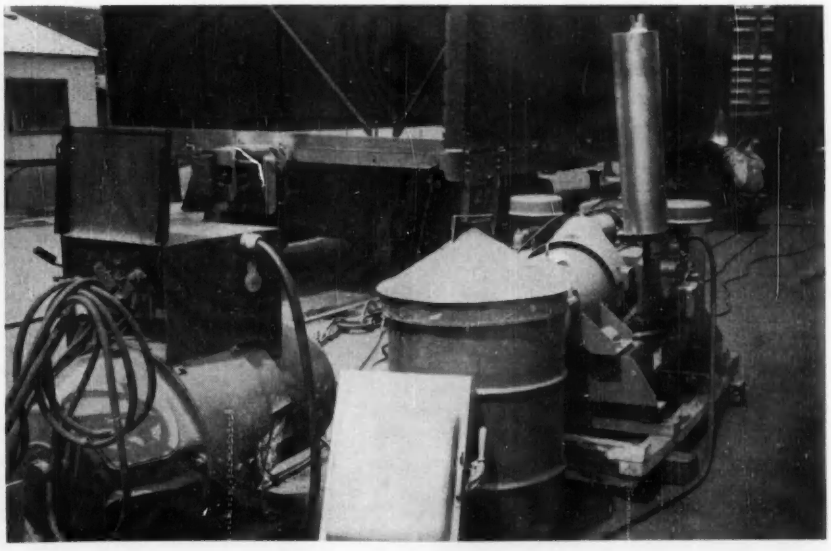
Operation

When the cars are pre-tripped—prepared for use at a service facility—the engine is started by controls grouped at the front of the radiator mount. The car's thermostat is set. From then on the unit is on its own and may run for hundreds of hours without so much as refueling. Obviously, some controls are necessary.

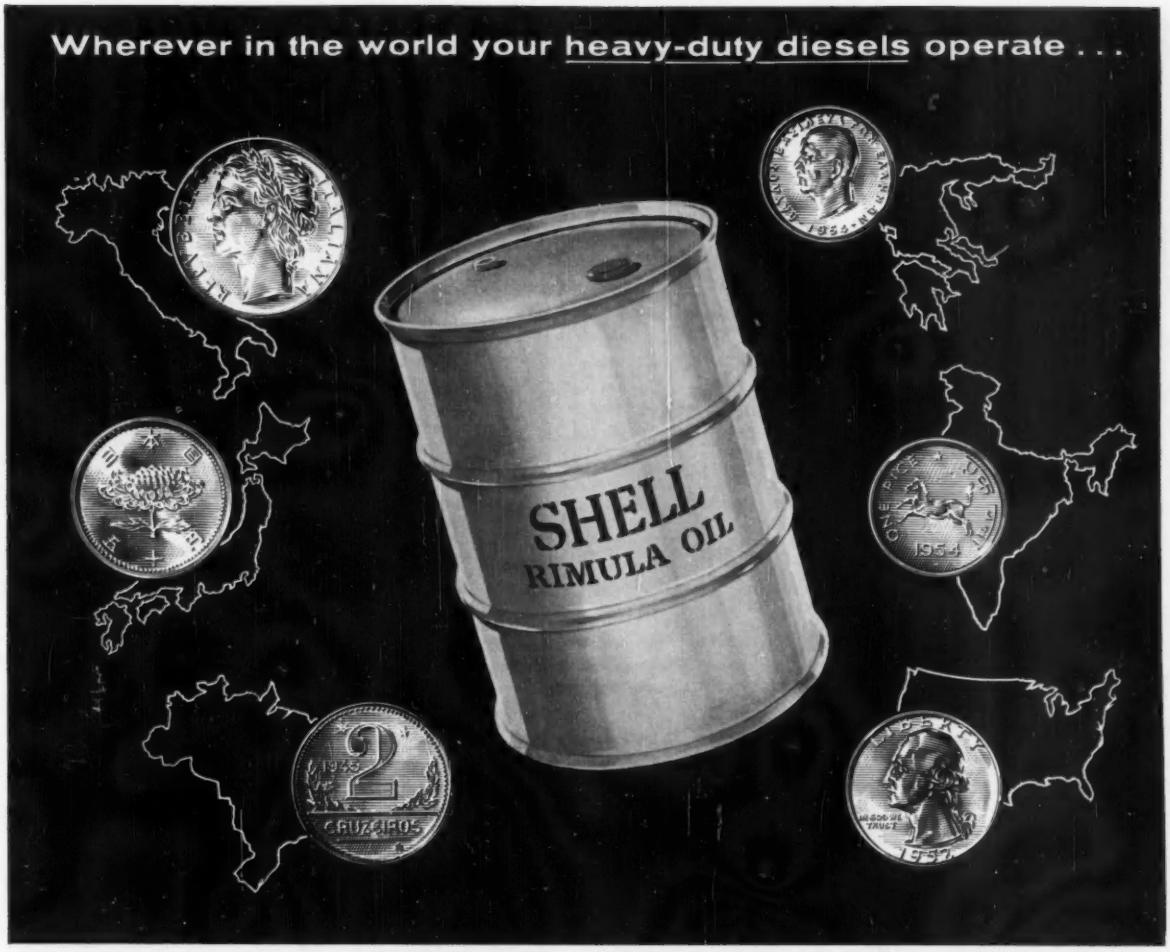
So far, no mention has been made of the fuel injection system. A RoosaMaster fuel injection pump is used and the system is "special" to the extent that some new controls are used to adapt it for this automatic operation. (Detailed description of the controls is given elsewhere in this issue.) They provide for an air-free fuel supply to the pump; make provisions for easy starting; control the engine at one of two speeds in accordance with refrigeration load; and provide shutdown in the event of low lube oil pressure (18/22 psi); and high cooling water temperature (218-222°F).

When full cooling effect is required as during box "pull-down" after loading, the set runs at the full-speed/full-load 1800-rpm. When box temperature

(Continued on page 40)



Powering electric welders, these Witte diesel-electric units "build their own homes." Helps seat the rings, says PFE.



Shell Rimula Oil is there

Other outstanding Shell Industrial Lubricants

- **Shell Tellus Oils**—for hydraulic systems
- **Shell Talona R Oil 40**—anti-wear crankcase oil for diesel locomotives
- **Shell Alvania Grease**—multi-purpose industrial grease
- **Shell Turbo Oils**—for utility, industrial and marine turbines
- **Shell Dromus Oils**—soluble cutting oils for high-production metalworking
- **Shell Macoma Oils**—for extreme pressure industrial gear lubrication
- **Shell Voluta Oils**—for high-speed quenching with maximum stability

AN INTERESTING FACT!
Every Shell Branded Industrial Lubricant is named for a sea shell. Shown here is the Rimula exquisita.

Around the world, Shell Rimula Oil is available—under the same brand name and providing the same efficient lubrication that your domestic customers rely upon.

Rimula® Oil is a heavy-duty oil that provides the finest crankcase lubrication for today's supercharged diesels. It has proved more than a match for the greatly increased engine ratings, high temperatures and pressures encountered in modern diesel operation. Rimula Oil successfully resists every destructive force that tends to accelerate engine wear.

* * *

The next time your specifications call for a heavy-duty crankcase oil, we suggest you order Shell Rimula Oil. Write or call today for complete information.

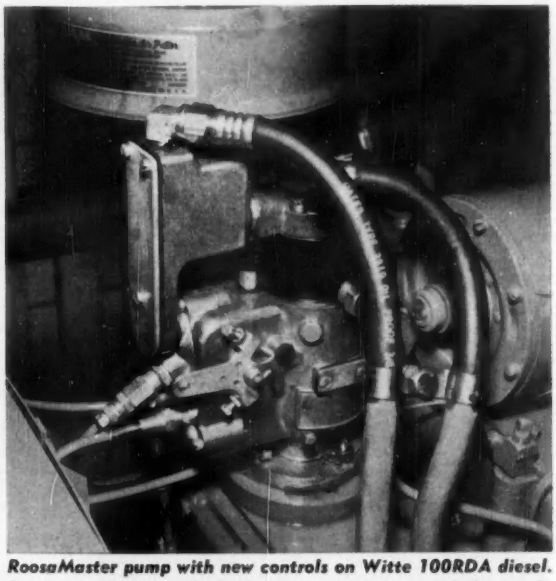
SHELL OIL COMPANY

50 WEST 50TH STREET.....NEW YORK 20, N. Y.
100 BUSH STREET.....SAN FRANCISCO 6, CALIFORNIA
IN CANADA: SHELL OIL COMPANY OF CANADA, LIMITED
505 UNIVERSITY AVENUE.....TORONTO 2, ONTARIO

SHELL

For more information write in No. 16

Accessories Broaden Injection Pump Applications



RoosaMaster pump with new controls on Witte 100RDA diesel. Hoses are fuel supply (right), return from top of day tank.

Controls, specially designed to attach to and work with the RoosaMaster fuel injection pump, offer new capabilities—plus engine safeguards —for automatic operation.

All the new RoosaMaster accessories and controls are used on the Witte 100RDA diesel engine-generator sets used for power in railroad reefer cars. By discussing their application in this case, their purpose and functioning can be described and thus better understood as a basis for suggesting other applications.

In general, all the new developments are aimed at providing an effective means of automatic engine control. Included is protection of the unit in case of malfunction. Six new items will be discussed, some working together but all having individual functions. They will be tied in with the problems that they solve.

Getting 2-speed control . . .

Witte's engine-generator set operates at two speeds—1800 rpm during temperature pull-down when load is heavy and a fuel-saving 1200 rpm at other times. Speed selection must be in response to a thermostatic switch located in the reefer car. This is done by a combination of electrical and hydraulic means.

Two-Speed Throttle Control—Two components are involved: (1) a solenoid valve assembly; and (2) a hydraulic throttle receiver unit. Here's how they work together.

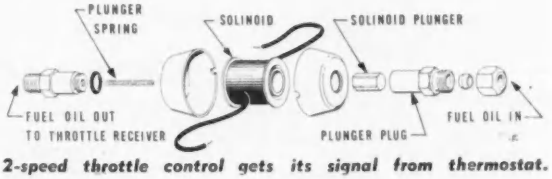
As long as the air being refrigerated remains above the pre-set temperature, the thermostat switch remains closed and supplies current to the solenoid coil of the valve assembly, holding the valve open. Fuel from the transfer pump is piped to this valve. When the valve is open, fuel pressure is transmitted through a tube to the throttle receiver unit.

This receiver unit is similar in principle to the one used in conjunction with RoosaMaster's hydraulic accelerator control (Diesel Power, November, 1959). In response to fuel pressure, a piston is moved to hold the throttle to the 1800-rpm full-load position. Design is such that the piston housing can be adjusted to set a desired speed.

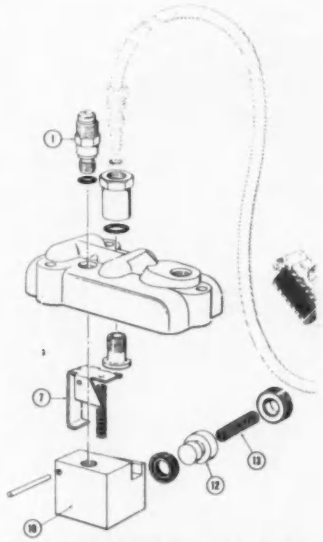
When temperature reaches the pre-set value, the thermostat switch opens and allows the solenoid valve to close. This shuts off pressure to the throttle receiver. Residual pressure in the line bleeds past a calculated clearance in the throttle receiver, allowing the engine to return to the 1200-rpm no-load speed.

And air-free fuel . . .

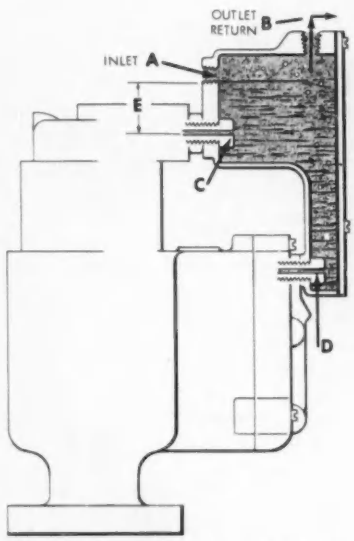
It is always a good bet to insure that fuel reaching the high-pressure pumping unit is free of air. In automatic sets, a self-bleeding system is particularly desirable and one has been provided in this case.



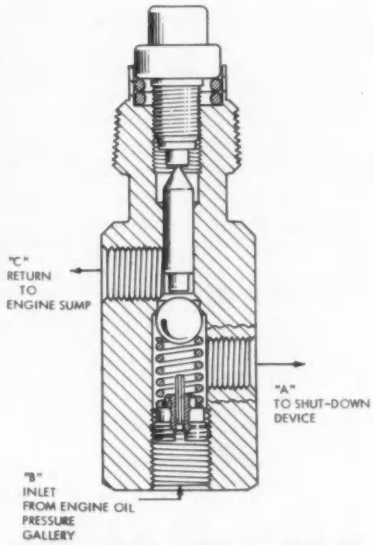
2-speed throttle control gets its signal from thermostat.



Safety Shut-Down. (see text) Phantom line is mechanical lockout acting on shut-down lever (7).



Day Tank prevents air from entering the pump . . . simplifies piping . . . maintains fuel for starting



Section through Temperature Valve. See text for explanation of how it functions with Safety Shut-Down.

Day Tank—Perhaps the name given this item is a little misleading as to size but it does serve the same function. It provides for air bleed from the fuel, simplifies fuel piping and maintains a small reservoir of fuel for starting. Application in its present form is specific to vertically-mounted pumps but a slight fitting modification will make it suitable for a horizontal pump.

An auxiliary supply pump feeds fuel to inlet A. Fuel supply to the pump is through C. Return oil, with any air entering with the fuel or vented through the pump, exists through D. Any air in the fuel either introduced at A or vented at D escapes back to the main supply tank through the fuel return outlet B. A head of fuel equal to dimension E is always available when starting.

Protecting the engine . . .

Low lube oil pressure and high water temperature are the two prime indications of impending engine trouble. Provision has been made to shut down the engine should either condition occur. It is also necessary to lock out the low lube pressure feature during starting as lube oil pressure is low at normal cranking speeds.

Safety Shut-down—Pressurized engine oil enters through connector screw (1) into body (10) where under normal pressure it acts against tripping piston (12) to compress spring (13). In this position, the tab on shut-down lever (7) rests against the piston's side such that the lever is held away from the governor linkage hook (not shown). A pressure-drop below the predetermined value lets the piston move in; the tab slips off the piston and, engaging the governor linkage hook, shuts down the engine.

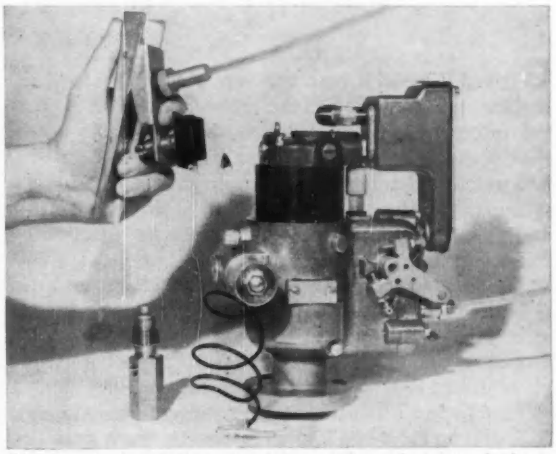
Temperature Valve—Used in conjunction with the shut-down device, this temperature-sensitive unit shuts down the engine when coolant temperatures reach 218-220°F. Expansion of the wax-type Vernatherm unit, acting through the piston, unseats the ball valve. This bleeds off lube oil pressure on the piston in the shut-down device, giving the same effect as a drop in lube oil pressure and shutting down the engine.

Engine starting controls . . .

Two conditions must exist with respect to the fuel injection pump during starting: (1) the low lube oil pressure shutdown must be blocked out; and (2) the cam ring should be in fully-retarded position. Two devices are needed.

Start Control—This lever-type control incorporates both the electrical starter switch and a mechanical lockout of the shut-down device. The latter consists of a

(Continued on page 49)



Start control operates starting switch and safety lookout.

Close Up:

GE's 2500-HP DIESEL-ELECTRIC LOCOMOTIVE

65,000-lb, 4-axles, 625-hp per axle . . . 7 years in development!

16-cyl U25B delivers highest horsepower-per-axle . . . couples speed with economy.

General Electric's new 2500-hp Model U25B is the highest horsepower-per-axle diesel-electric locomotive yet offered America's railroads. Seven years in total development, a 2-unit prototype has traveled over 150,000 miles in demonstration service on the Erie, Pennsylvania, Southern, Louisville & Nashville, Norfolk and Western railroads, and is now being operated on mid-western roads.

The locomotive, 60-ft, 2-in. from coupler to coupler, is built on four axles with 65,000 lb and 625 hp per axle. Total weight is 130 ton. Designed for speed and economy, the U25B utilizes a 16-cyl turbocharged engine built to G-E specifications by Cooper-Bessemer.

This Type FVDL engine is a modified version of the 6, 8, and 12-cyl Type F diesels used in more than 400 G-E Universal line locomotives now in service in the United States and abroad. It is a 4-cycle, turbocharged, vee type with cylinders of 9-in. bore and 10½-in. stroke and was designed specifically for locomotive service.

An Elliott model H-588 turbocharger having a pressure ratio of about 21½:1 is used in conjunection with two Perfex intake aftercoolers to give the engine 2750 gross hp and 2500 net hp at 1000 rpm. A Woodward PGR electro-hydraulic type governor handles speed and load control. The governor incorporates a built-in safety shutdown for low lube pressure.

A G-E type GT-598 traction generator is direct-connected to the engine and furnishes power to four axle-mounted traction motors. Traction generator is a direct-current, single anti-friction bearing, separately-excited machine and is equipped with windings to permit cranking the engine by using storage battery power.

The four d-c traction motors are the highly-regarded GE 752 type. Each motor drives its axle through single-reduction spur gearing. They are supported by the axles to which they are geared, and by resilient nose suspensions on truck transoms.

Complete engineering and test facilities to develop the 2500-hp diesel were established in Erie in a 7-year development program conducted by G-E under direction of J. C. Rhoads, Manager—Railroad Locomotive Engines, Locomotive & Car Equipment Dept. Extended service life and simplified maintenance were twin objectives stressed by Rhoads in the development program.

Engine Details

The rigid main frame is cast of Mechanite. It supports a forged crankshaft, nitrided to improve wear qualities. Quick-access crankcase covers of stamped metal are provided and these also serve as explosion relief door.

Each cylinder including the head is cast in one piece. Each is held secure to the main frame by four bolts at the bottom end. This eliminates need for upper cylinder hold-down bolts and gas-seal joints. The entire cylinder can be removed quickly to expose the piston and allow rings to be changed. No bearings are disturbed in this process.

Longitudinal flutes, cast into the cylinder housing, back up the liner. This permits use of a thin-wall (3/16-in.) chrome-plated, centrifugally-cast iron liners. Wearing qualities are good, heat transfer rapid. This liner is assembled from the bottom of the cylinder housing with a slight interferance fit and is positively retained by a bolt-on ring. The fluting, while backing up the liner, also provides passages for cooling water. Also, with the integral head, cooling water passages are continuous, eliminating troublesome water-connection grommets.

Main and connecting rod bearings are of precision type. Cooper-Bessemer's articulated connecting rod design is used. Piston pins are of the bolt-on type permitting maximum effective bearing area in the piston bushing. Alloy cast iron pistons have two oil control rings and four compression rings. Oil cooling of the piston crown also extends behind and above the compression ring area, controlling ring temperatures.

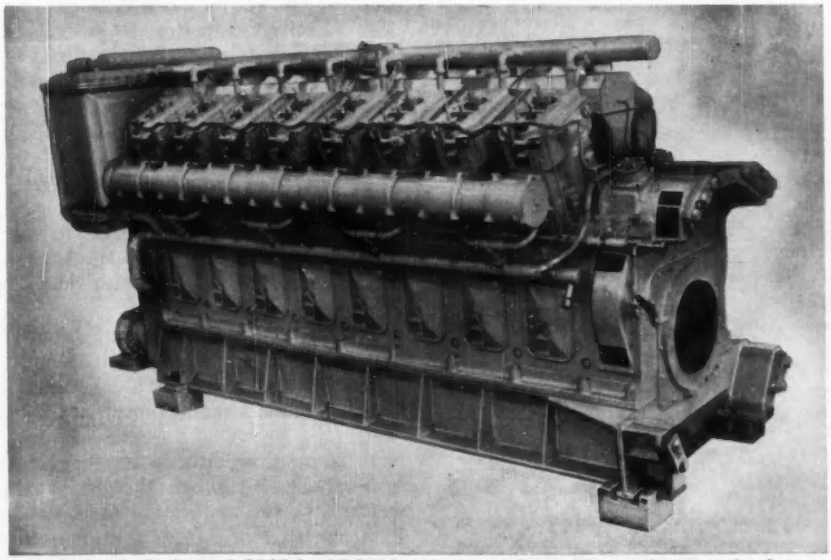
Heads have four valves, both intakes on the outside and the exhausts on the inner side. This arrangement improves breathing characteristics.

Bendix-Scintilla individual-type fuel injection pumps are located at the top of each head and operated from the camshaft by pushrods. This location reduces length of high-pressure lines to the injectors. The top cylinder cover can be removed for inspection purposes without disconnecting high-pressure fuel lines.

Intake manifolds are outside the vee and are sectionalized for simplified maintenance. The stainless steel exhaust manifold is within the vee and is made up of eight individual pipes, one for each two cylinders. Exhaust gases go directly to the turbocharger inlet box.

This manifold is built by Hanlon & Wilson and is the result of more than 3-yr design and engineering research cooperation by Hanlon & Wilson and General Electric. Light and designed for long service, its contoured forming provides for an even gas flow and reduction of turbulence. Vibration and expansion requirements are handled by slip-joint construction, each slip-joint being encased in a bellows that insures gas-tight operation.

(Continued on page 30)



16-cylinder turbocharged 2500-hp U25B diesel was built to GE specifications by Cooper-Bessemer—offers 50% more power than conventional diesel-electrics in mainline service!

(Continued from page 29)

Cooling System Unique

A dry radiator system is incorporated to maintain engine temperature in the 170 to 175°F range. Cooling water circulates in the engine and a tank inside the engine hood until the temperature approaches 170°F. Thermostatically controlled bypass valves start to open at 165°F, and are fully open at 180°F. This action builds up pressure in the poppet valve to open sending a surge of water through the cooling radiator.

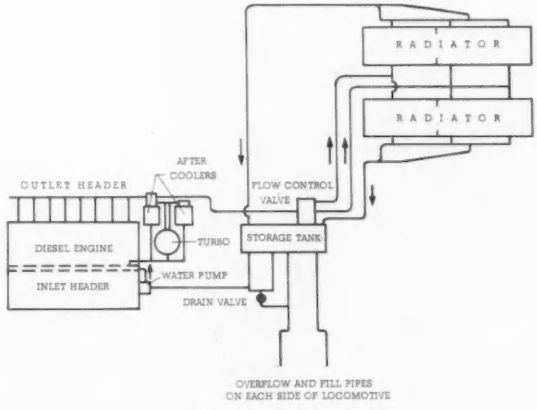
The thermostatic valves then control the system to maintain desired coolant temperature. As this temperature drops the valves gradually close, restricting flow to the radiator. If pressure in the valve chamber becomes low enough the poppet valve closes, cutting off flow to the radiator. The system thus works on a "batch-cooling" basis, rather than permitting small amounts of water to flow continually into the radiator section.

G-E experience indicates that a 2 to 3°F variation in engine temperature can be expected under normal operating conditions. Also, a spread of not more than plus or minus 10°F is expected under all service conditions.

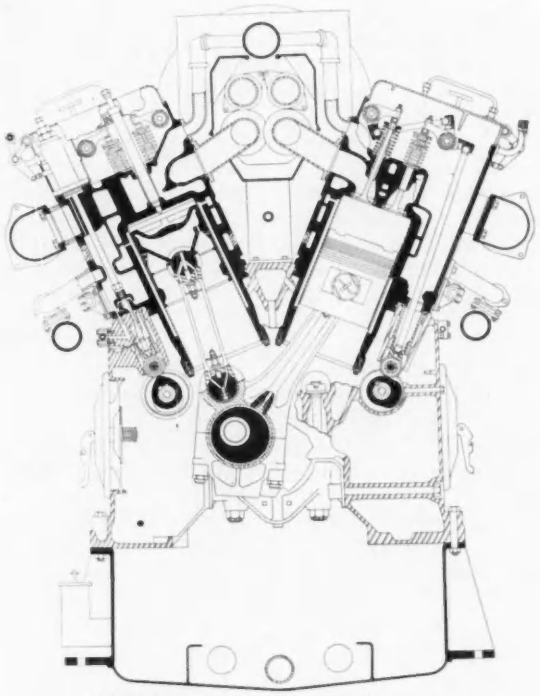
This system prevents the coolant from freezing and no antifreeze is neded. It is designed and has been tested for operation without antifreeze in temperatures to minus 40°F.

Locomotive and Engine Air

Realizing that increased maintenance costs and dirt are closely linked, G-E engineers have designed the U25B with a dual air filtration system. This, in effect, provides two-fold conditioning of air entering the engine.



Cooling system flow control valve has 3 stages: 1. Cold engine —radiators dry, all water by-passed to storage tank. 2. Light load—water circulated in 1/3 of radiator. 3. Full load—water circulated in entire radiator. Thermostat modulates flow.



U25B features continuous cooling water passages . . . and C-B articulated rod.

All locomotive ventilating air, except that used for cooling radiators and braking resistors, passes through an axial-flow blower and a static-type self-purging air cleaner. This cleaning process removes substantially 100% of particles above 8-micron size and a large proportion of smaller particles.

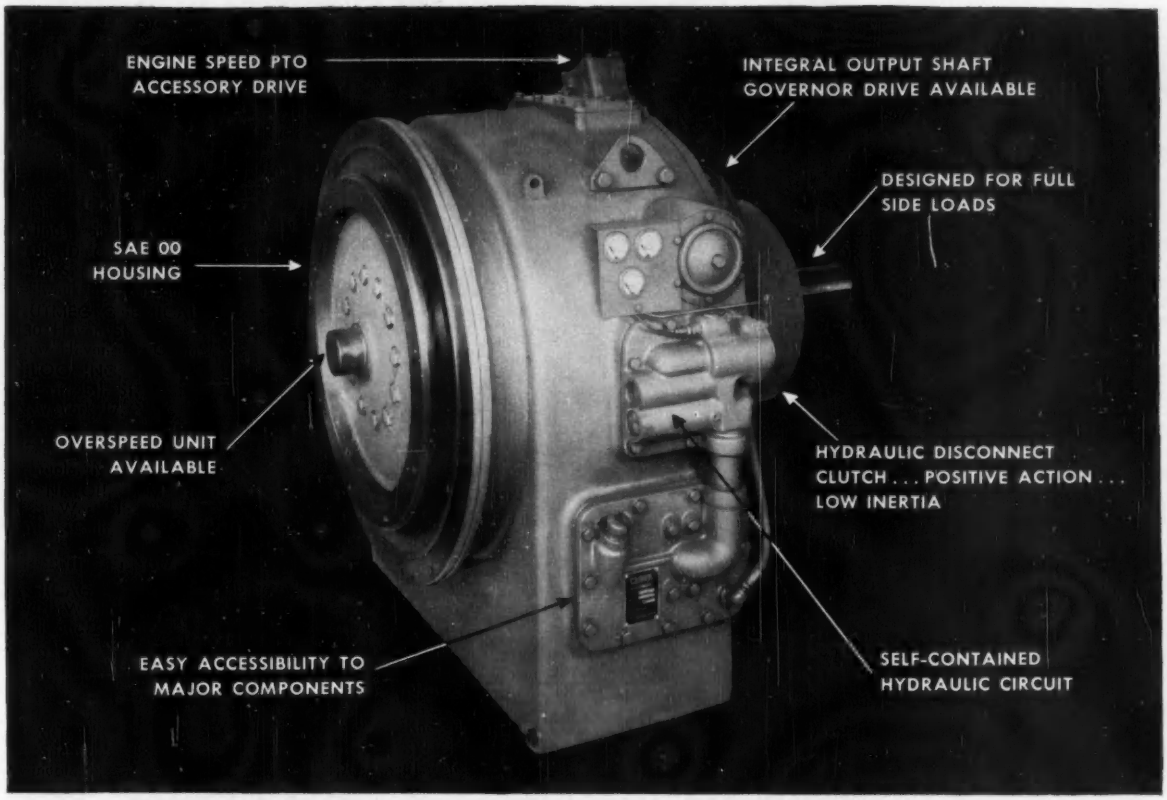
Cleaned air flows through a duct formed by the space between the platform center sills to the engine, operating cab and compartments housing electrical equipment. Combustion air for the diesel is further filtered in panel-type oil-bath units. With positive pressure in the various compartments, possibility of air with attendant dirt entering openings in the cab structure is eliminated.

Operating Controls

The operator cab is located in conventional road-switcher position. It is ventilated with cleaned air and heaters are installed in the air ducts for cold weather operation.

All air-brake devices, main propulsion control, battery trays and air filter assemblies are located in easily-accessible compartments along the sides of the locomotive. These are also pressurized to exclude dirt and water.

A 16-position throttle on the U25B regulates the engine output through the Woodward governor and controls proper application of power to the four traction motors. However, so as to permit integration with existing units, it is arranged to operate in multiple with locomotives having conventional 8-notch throttles.


ENGINE SPEED PTO ACCESSORY DRIVE
INTEGRAL OUTPUT SHAFT GOVERNOR DRIVE AVAILABLE
DESIGNED FOR FULL SIDE LOADS
SAE 00 HOUSING
OVERSPEED UNIT AVAILABLE
HYDRAULIC DISCONNECT CLUTCH . . . POSITIVE ACTION . . . LOW INERTIA
EASY ACCESSIBILITY TO MAJOR COMPONENTS
SELF-CONTAINED HYDRAULIC CIRCUIT

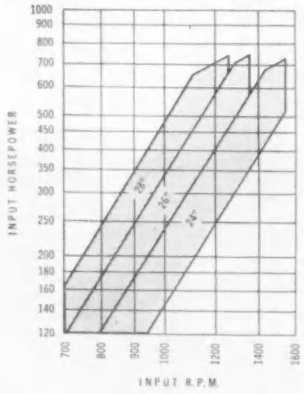
NEW FROM CLARK

24-26-28" TORQUE CONVERTERS

3 power ranges all in a single housing

Any big engine will accomplish more work with less wear when equipped with a 24, 26, or 28-inch Clark Torque Converter. These units automatically balance load and torque to provide maximum horsepower. Flow of power is smoother to eliminate shock loads and overloads. Engine life is lengthened and downtime is substantially reduced.

To select which of these Clark Torque Converters best fits your need, check the chart:



Clark builds a complete line of Torque Converters with option features to tailor the Torque Converter package to the specific needs of any installation.

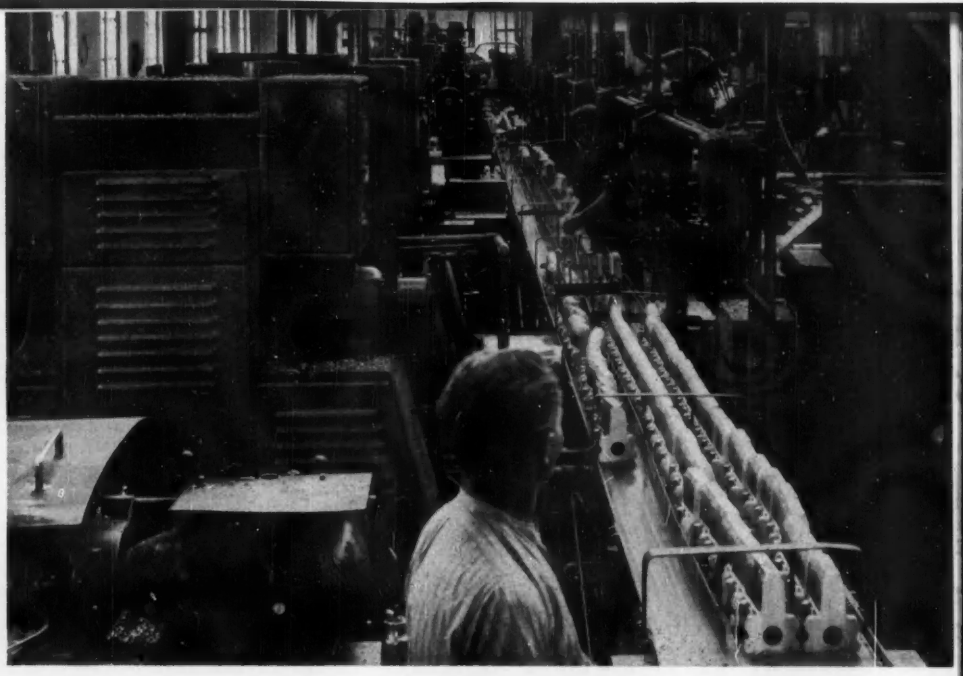
For free folder on any Clark Automotive Product, check box, clip coupon and attach to your letterhead.

☐ Torque Converters ☐ Transmissions
☐ Axles ☐ Axle Housings

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Automotive Division
Jackson 11, Michigan

For more information write in No. 17



Report on . . . R-B Distributors' Meeting

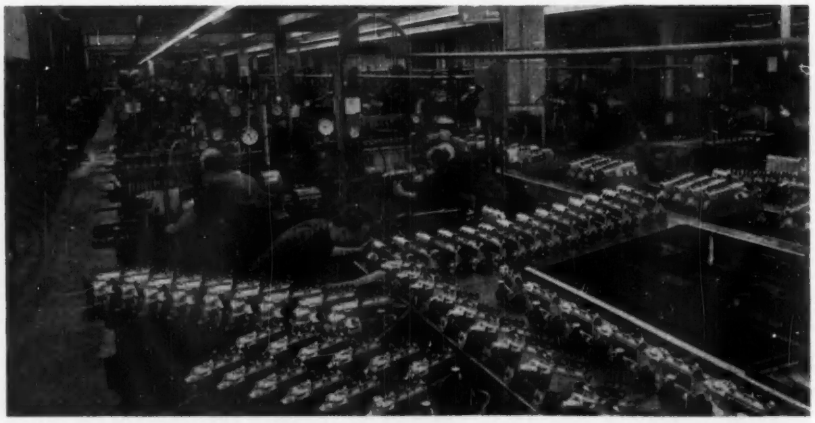
What Robert Bosch Corporation's central distributors saw and did on an R-B-sponsored German Factory visit.

One objective of the recent visit of American central distributors of R-B diesel injection equipment and automotive electrical equipment was to round-out the "corporate image." Distributors knew the products and the Robert Bosch Corporation's operation and people in New York . . . but what about the parent company?

How big is it? What's its production? Who are the people running things? What is their thinking on product development . . . on research . . . marketing plans? To get these answers and complete the picture, a planeload flew to Stuttgart, Germany.

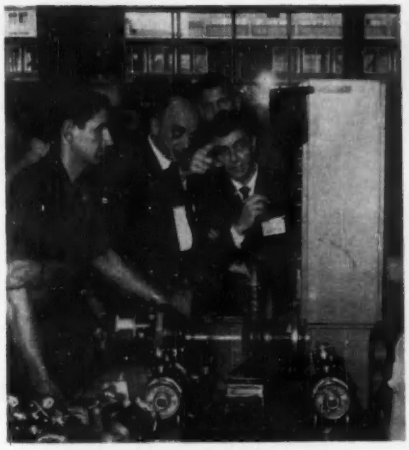
And they got the answers—plus a generous helping of German hospitality. Tours of some of the Stuttgart and nearby Feuerbach factories, largely devoted to automotive electrical and fuel injection equipment, left no question of size and production. They're big!

They saw the complete research and testing facilities where products are born, prototypes built and then



Test stands for final calibration of completed pumps stretch to the end of the room. Despite jigs and quick-clamping devices, production volume requires this many stands.

One line for machining of PE Type pump bodies. One year's production of this type pump alone well exceeds in number the total annual production of diesels in this country!



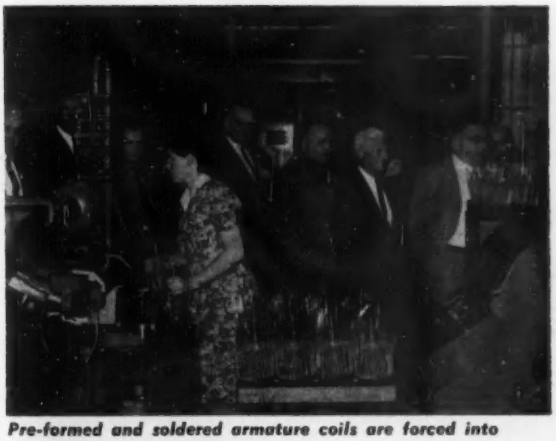
W. "Bill" Boedecker, Robert Bosch Corporation, New York, points out readings on final starter test to Editor.

tested under extremes of environmental conditions to insure operation anywhere in the world. Then there was the apprentice training setup where youngsters undergo 3- and 4-yr training under rigid company and German State supervision. The tradition of craftsmanship is being perpetuated. They also visited the service training center where factory, distributor and other selected service personnel get intensive training.

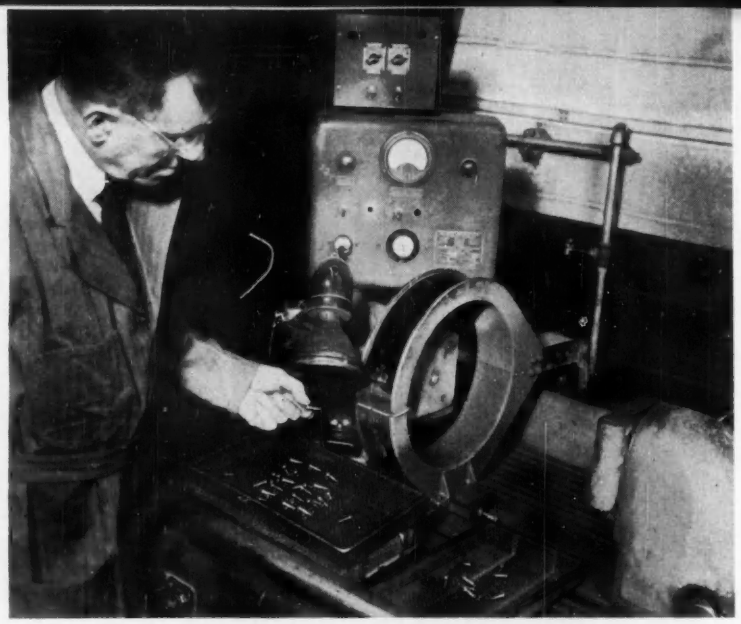
They met key people with responsibility for direction of different phases of this organization with its worldwide distribution . . . Otto Kurrer, Director of Export Division, who touching on history, described the organization today . . . Wilhelm Lutz, Manager of North American Group of Export Division, who organized the program and indefatigably answered questions . . . K. G. Alberts, who discussed trends and developments in automotive electrical equipment . . . Dr. Hans Heinrich, who covered the same area in the fuel injection field . . . Dr. W. Moeller and Hans Schenk, discussing respectively R-B's policy and organization for domestic sales and service, and supporting advertising and sales publicity . . . and other helpful and informative persons, too numerous to mention here.

In short, the group got what it went for—knowledge of the parent company, what it was, what it is, and where it is going. Superimposed on this is knowledge of the people involved. All this went to make-up each distributor's "image" of the parent corporation. And from comments received on the return flight, it came out as an excellent "picture."

Dr. Hans Heinrich makes point in talk on fuel injection equipment design-and-development trends.



Pre-formed and soldered armature coils are forced into core slots under high pressure.



Early step is magnetic particle inspection. Critical injector parts get initial cleaning, are subjected to "Magnaflux's" close scrutiny . . . any invisible fatigue cracks show up here . . . unsound parts are immediately discarded.

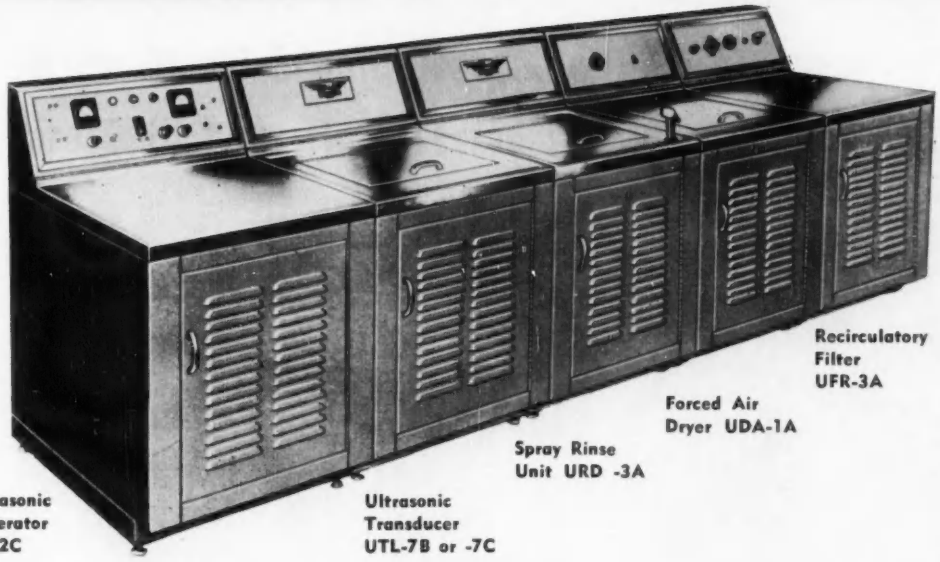
How Interstate

Specialization and precision tooling produce high production volume . . . lead to organizational growth.

Out in Cleveland, Interstate Diesel Service, Inc. set up to do one thing—re-manufacture GM injectors and fuel pumps. They realized that in addition to skilled technical leadership they would need the best precision machinery and equipment available. Rapid and steady company growth is the best evidence of the soundness of the specialization idea and achievement of product quality.

They re-manufacture injectors for GM 51, 53, 71 and 110 Series engines. These are made available to users on an exchange basis through dealers throughout this country, in Canada and Mexico. One reason they give for constant improvement in product quality—units are warranted to meet "new" specifications—is their policy of steady acquisition of the most modern machines and test equipment. Here are some of them.

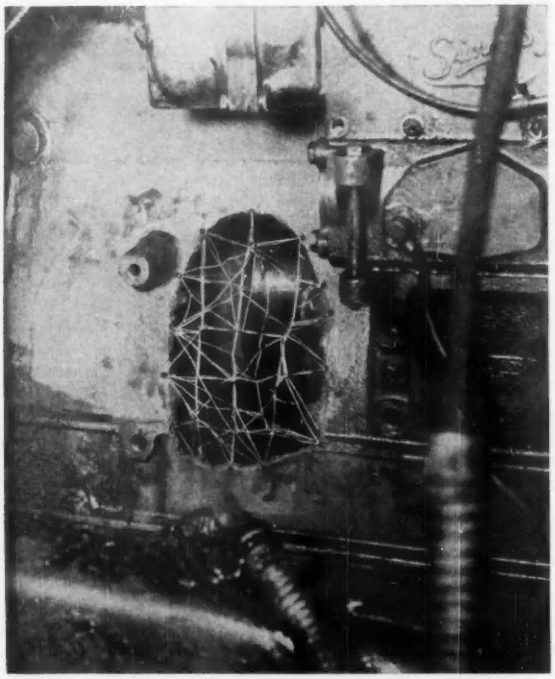
Flat-Lapping machine—with injector parts loaded in truing rings—produces practically perfect flatness, essential for proper sealing between parts. Lapping operation is followed with a flatness check under the Monochromatic Lamp and optical "flat" . . . then parts go under a double-lens, 100-X microscope. Chamfer on valve seats and convex face on crown valves get careful going over.


Ultrasonic Generator UG-2C
Ultrasonic Transducer UTL-7B or -7C
Spray Rinse Unit URD -3A
Forced Air Dryer UDA-1A
Recirculatory Filter UFR-3A

Now we're ready for ultrasonic cleaning—every injector part is ultrasonically cleaned, rinsed and dried in Interstate's Bendix unit just before final assembly. Result is that the injector's biggest bugaboo—dirt is completely eliminated.

re-manufactures injectors

Fuel output measurement is obtained on a Kent-Moore comparator. This determines that fuel delivery is within specifications . . . gives accurate output volume. Best engine performance depends on close matching of injectors. Comparator testing is an important step . . . and Interstate insists on it!

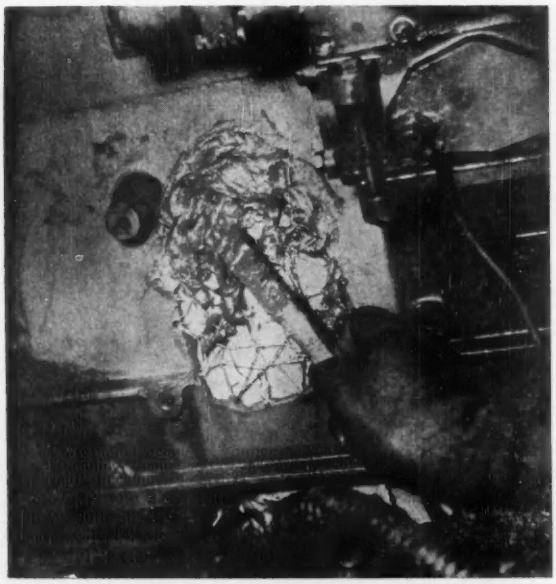


1 "My almost new diesel truck overheated and seized its end bearing, breaking the connecting rod and smashing a hole on each side of the block big enough for a fox terrier to jump through! A new engine would cost me 450 Pounds (approximately $1260). Repairs would have run me 200 Pounds (around $560) plus considerable downtime. So I took the bull by the horns, drilling holes 2-in. apart around each hole. Then I knitted wire through them . . ."

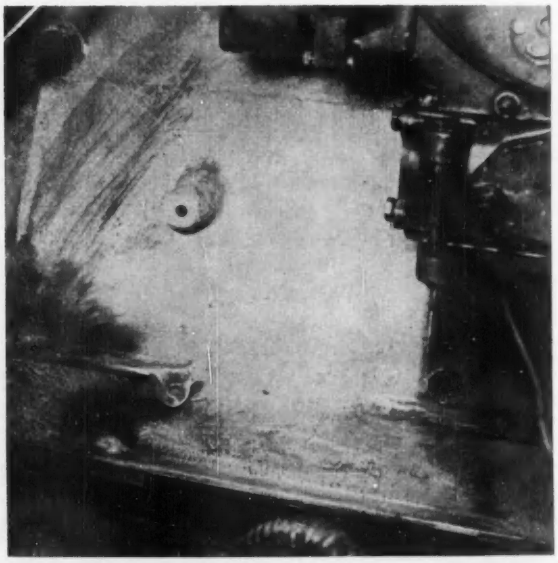
the "HOLE" story

Plastic Steel makes quick do-it-yourself patch for low-stress engine area—allows equipment to keep running!

When a connecting rod on his diesel let go due to bearing seizure, Godfrey W. Volkwyn, who hails from 'way down in Johannesburg, South Africa, came up with a time and money-saving "save". He used Devcon Corporation's Plastic Steel to make a quick do-it-yourself repair—two hours later and at a cost of only $2.50 his truck was ready to run again.

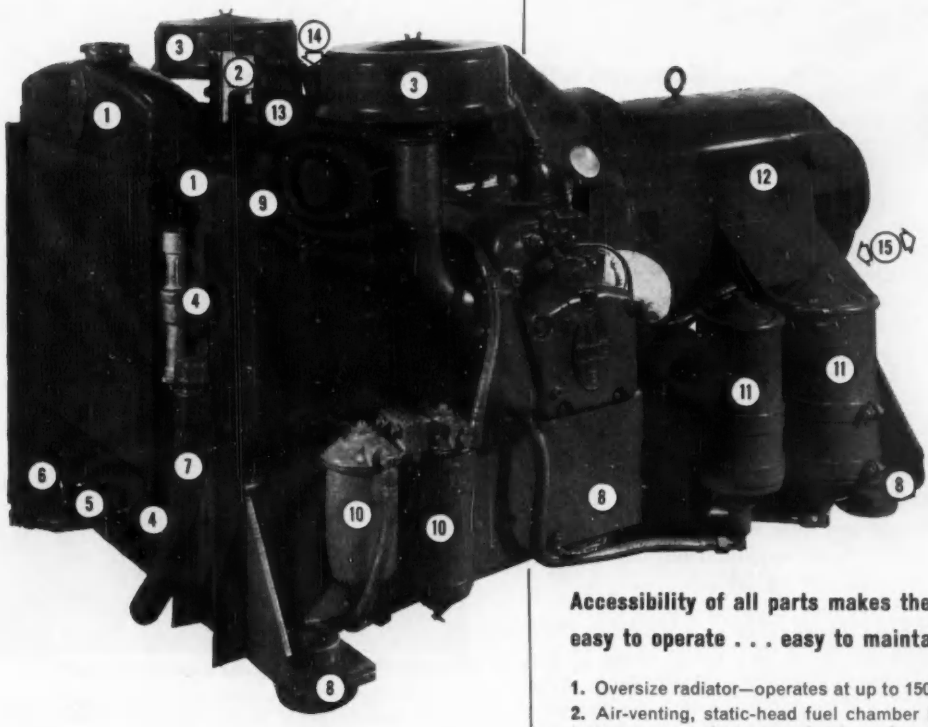


2 "Now, I was ready to trowel on the Plastic Steel . . . "



3 ". . . and when it was dry I ground the area carefully. Total cost for the job was 17 Shillings and Sixpence (approximately $2.50) for the Plastic Steel . . . plus two hours labour. Life? Unknown but the truck has run over 14,000 miles since without failure! This alone has paid the repair cost and deferred major expense."

Witte Diesel Engine-Generator Units are Built Low, Time-Tested and Packed with Endurance



Especially built for demanding refrigeration service, the Witte Model 100RDA, Type "E", 12½ KW Diesel Engine-Generator Unit has a 60 cycle-40 cycle brushless generator and Witte two-cylinder, horizontally-opposed, 4 cycle Diesel Engine.

The Railway Mechanical Refrigeration Industry is relatively new . . . yet Witte has been active as a power supplier in the field for over five years. Repeat orders from users attest to built-in quality and reliable performance. These fine railroad units are backed by a world-known organization.

Witte . . . noted for long-lived, continuous-running engines . . . is continually proving the capability of this railway unit in mechanical refrigeration applications—where only a "live" engine is an acceptable one.

USS and Witte are registered trademarks

Witte Engine Works
Oil Well Supply
Division of
United States Steel

USS

1615 Oakland Avenue, Kansas City 26, Missouri

Accessibility of all parts makes the Witte easy to operate . . . easy to maintain.

1. Oversize radiator—operates at up to 150°F. ambient.

2. Air-venting, static-head fuel chamber built into injection pump—eliminates shutdown from air leaks in car's fuel system.

3. Dry type air cleaners—quickly and easily serviced.

4. Ether injection system—for cold starting.

5. Starting control (one lever provides all starting functions).

6. Stop control.

7. Extra length, lube-oil, dump hose—completely drains sump.

8. Extra-heavy, rigid, skid-support with oversize shock mounts.

9. Two-speed engine control (1800 rpm—"pull-down" speed) for maximum fuel economy (1200 rpm—"holding" speed) Thermostat actuated.

10. Primary and secondary fuel filters.

11. Bypass, Full Flow lube oil filters—1200 hr. change period.

12. 12½ KW (continuous rating) brushless generator—operates at 60 cycles ("pull-down") 40 cycles ("holding").

13. Mechanical, safety shutdown—built into injection pump.

14. Load Compensator Switch—extends the functioning of the mechanical safety control to meet abnormal, transient temperature conditions.

15. Center-of-Mass of the Witte unit is less than 16 inches off the car floor—optimum installation to handle car humps, shocks and over-the-road vibration.

All accessories are readily accessible.

CONNECTICUT'S FIRST DIESEL-POWERED CAB

Success with '59 Perkins-powered Plymouth leads to four diesel-powered Dodge Darts!

"Everytime you look around these days they're raising the gasoline taxes on you!" The speaker was Stamford Taxi Company's manager, Salvatore Catino. He was standing with us on the railroad platform beside his taxi-shack. "Frankly," continued Mr. Catino, "we're at the point now where we can't afford to increase our rates without risk of losing customers. Everytime taxi fares go up, more people buy these little foreign cars. . . . We're absorbing some of the increases, of course. If we didn't, we'd have priced ourselves right out of business long ago. But you can't stay in business that way, either".

Just then a commuter train came in, disgorging hot, tired passengers. Mr. Catino excused himself while he helped customers into waiting cabs.

Answer to the price squeeze . . .

"What's the answer to all this price squeeze?" Mr. Catino asked when he came back. "Well, looks to us in our operation like the diesel is! From our six months experiment with this '59 Perkins-powered Plymouth, looks as though diesels will let us maintain our present fares and still make money. Big city taxi fleets have been trying 'em . . . and makes just as much sense for the small fleet operator like us—*maybe more!*"

Between trains, Mr. Catino proudly pointed out Stamford Cab's new pump and tank for diesel fuel. It had just been installed, proof of how seriously they're treating diesels. Additional proof is the fact that four new Perkins-powered Dodge Darts had just arrived from Ken Brown, Inc., making the diesel conversions of new cabs in Detroit. More were expected in the near future.

Complaints? So far there hasn't been any. A few do notice the different-sounding engine up front. But most of Mr. Catino's customers don't even know the difference.

"We know the difference, though," Mr. Catino told us. "That '59 Plymouth—it'll be in here in a minute, so you can see it—burns about half the fuel our other cabs do. Don't have to tank up as often!"

While we stood there on the station platform waiting for the diesel-powered cab to come in, Mr. Catino told us that he was somewhat skeptical about diesels in the beginning. "The smell—I guess that's what I was worried about most of all. I was worrying about the summer when all the cab windows would be rolled down, wondering if there'd be any trouble with smell." Mr. Catino smiled, shaking his head. "Well, here it is the *middle* of summer and there hasn't been one complaint on smell. I'll take that back—our driver Smitty did have some No. 2 on his hands the other day. He'd been checking a filter, I guess. And one of his fares—a woman I think she was—mentioned that 'Something smelled like a kerosene lamp' ".

"Diesels make sense for small operators, too!"

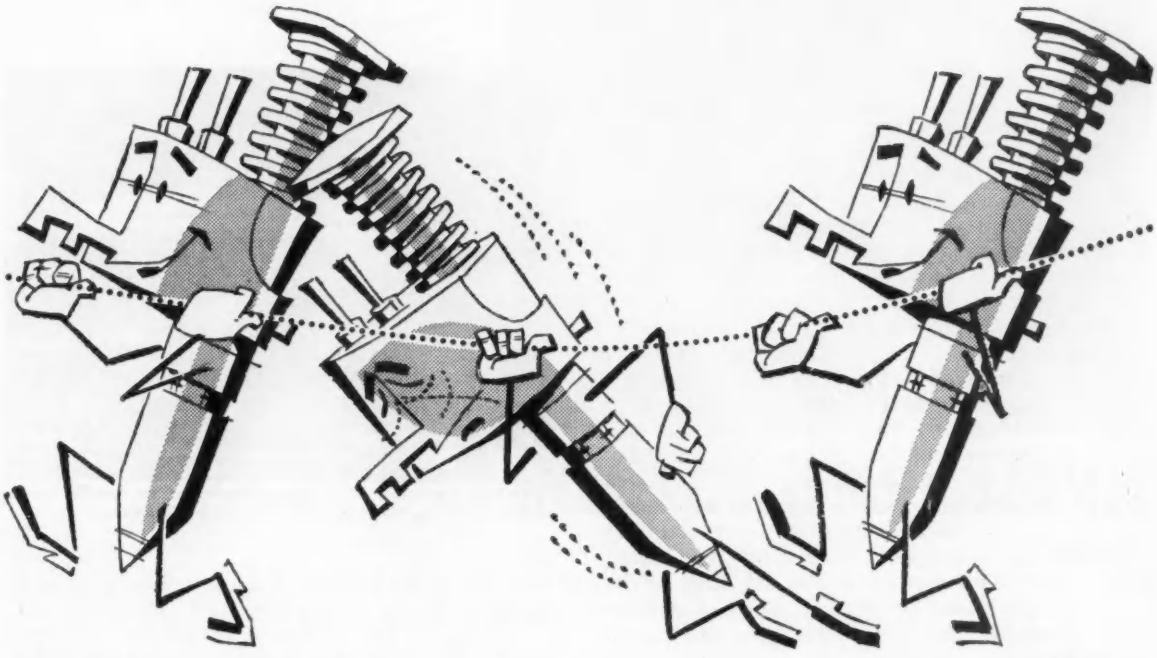
We go along for a ride . . .

It wasn't long before the Perkins-powered Plymouth cab rolled in . . . and we hopped up front beside Bill "Smitty" Smith—spent an hour or more wheeling in-and-out through the back streets of Stamford, picking up and dropping fares, even took a 60-mph swing along the Connecticut Turnpike that cuts smack through the center of Stamford.

"Smitty" is in his early 50's—used to drive a Mack diesel truck, hauling steel and beer into Chicago, Detroit, Milwaukee . . . New York and Boston. "Mighty nice to get back behind a diesel after driving gas cabs," Smitty said, smiling.

A call came in over the radio. Smitty picked up the hand microphone, took the call and then swung the cab around heading for the address the dispatcher had given. "One thing we've found out about operating these diesels, though, is you've got to watch the vibra-

(Continued on page 40)



Who's dragging his feet?

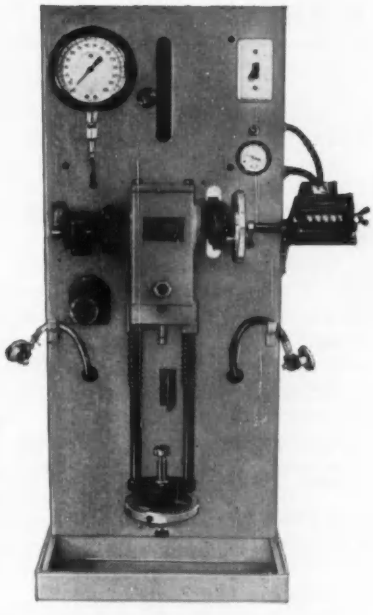
Visual inspection won't tell you which fuel injector is causing a once smooth, powerful Diesel to lose power, waste fuel, and run like a one-legged miler on a broken crutch.

But a Kent-Moore Injector Comparator can tell you—and in a matter of minutes.

How?

By testing the fuel flow capacities of *all* the injectors. And indicating which one is guilty of delivering too much or too little fuel to its cylinder at a given throttle setting.

Manufacturer's maintenance manuals tell how to use the Injector Comparator. Follow the factory recommended procedure for higher performance standards and better operating economy by matching the fuel flow characteristics of the unit-type injectors in your engine, through replacement or rebuilding with factory-approved parts.



J8686 Injector Comparator

H4

KENT-MOORE ORGANIZATION, INC.

28635 MOUND ROAD, WARREN, MICHIGAN • ENGINEERS AND MANUFACTURERS OF SERVICE TOOLS AND EQUIPMENT

For more information write in No. 19

Diesel Cab . . .

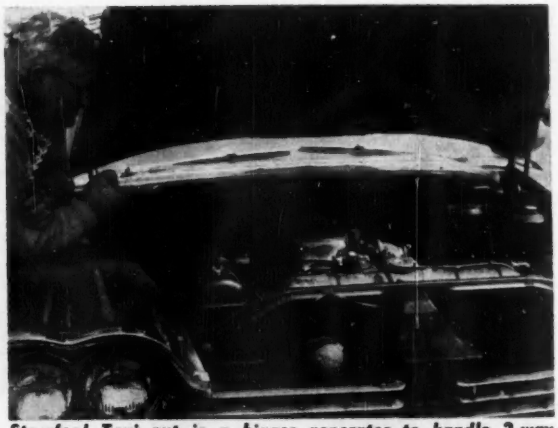
(Continued from page 38)

tion. Maybe you don't feel it here . . . but up there near the engine there's vibration. You've got to keep all those hoses long and plenty flexible. And you *should* check things carefully once a week, just to make sure nothing is loosening up . . . things like a muffler, radiator hose. All it needs is a little tightening and routine inspection to take care of it".

What's Smitty think of his diesel cab? "Well, we don't have any trouble with engine heat—it's cool behind the wheel here and it's cool the other side of the firewall too. It's a good cab to drive summer and, matter of fact, winter time too. You probably remember that big snow we had last February? Well, I pulled right up Palmer's Hill—and it was packed with stalled cars that couldn't make it! Now, of course, you can't jack-rabbit start this Perkins-Plymouth and that's good—good for our tires and engine and easier on our customers, we figure. But it's got plenty of power—*all the power you need*. You can get right up to 60-mph on the Turnpike—just takes a little longer to come up to speed, that's all".

What about fuel economy from the driver's point of view? "When I came on this morning I had a full tank," Smitty told us, tapping the gauge. "So far today I've taken in $25 for the company . . . and still got ¾ tank left. As my boss Sal Catino says, 'Looks like all of you'll be driving diesel pretty soon.' Savings on fuel . . . savings on maintenance, it all adds up in the long run. Looks like the diesel is *the tool* that's going to save our jobs for us here in the taxi field!"

Smitty glanced at his watch. "But as for me? Right now what I'm looking forward to is a real halfway decent meal, and a little TV and then to bed. Ten hours behind the wheel really gets you. . . ."



Stamford Taxi put in a bigger generator to handle 2-way radio . . . long, flexible hoses to absorb vibration.

Rail-Riding Diesels . . .

(Continued from page 24)

drops to the pre-set temperature, a signal from the thermostat cuts the set down to a 1200-rpm high-idle speed. At this rpm the set can handle normal defrost, refrigeration or heating cycles. On a swing of three or more degrees, a thermostat signal automatically puts the engine back to work at the higher rpm.

An additional operating feature is automatic unloading. If a temporary condition causes coolant temperature to rise, it may not be desirable to shut the unit down. A second temperature-sensing element ties in with the refrigeration controls. It is set approximately 6° below the range of the shut-down element. When the lower temperature is reached, the refrigeration load is dropped temporarily letting the now-unloaded engine cool. When the water gets down around the 200°F mark, the load is picked up again. If it goes up again, hitting the top-limit temperature, the engine is shut down.

Savings are the Payoff

The concept of diesel-electric mechanical refrigeration plus the refinements in everything from the diesel to the insulation of the car is not only meeting today's higher demands but is reducing the cost. Greater demands for controlled cooling are being met by smaller units, at less first cost, running cheaper and requiring little maintenance.

Automatically-controlled 2-speed operation with the bulk of operation at the lower speed not only improves service life but reduces fuel costs. Fuel consumption at the 1800-rpm speed is between 0.81 and 0.9 gal/hr. At the lower speed it is almost a third less or around 0.6 gal/hr. And even at the higher speed it is substantially less than with some of the earlier 20 to 25-kw models.

With about 129,000 reefer cars in use, mostly ice-cooled, it will be some time before mechanically-cooled refrigerator cars take over. But the handwriting is on the wall. From now on, we'll see more and more orange "fruit cars" with little louvered doors at one end.

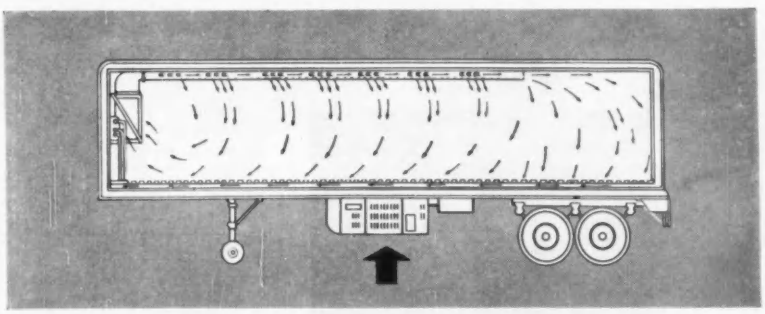
List of Principal Equipment On 100RDA Diesel-Generator Sets

Engine	Witte Engine Works
Engine High Temperature Unloader	United Electric Controls
Engine High Temperature Shutdown Valve	Hartford Machine Screw
Fuel Injection Pump & Controls	Hartford Machine Screw Co.
Generator	Electric Machinery Mfg. Co.
Exciter	Electric Machinery Mfg. Co.
Fuel Injectors	American Bosch
Fuel Filters	Commercial Filters Corp.
Fuel Transfer Pump	John S. Barnes Corp.
Lube Oil Filters	Fram Corp.
Air Cleaners	Fram Corp.
Starter	Electric Autolite
Cold Starting Aid	Chevron (California Oil Co.)
Batteries, Nickel Cadmium	Sonotone Corp. Nicad Division, Gould-National Batteries, Inc.
Rectifying Battery Charger	Vapor Heating Corp.
Silencer and Spark Arrestor	Nelson Muffler Co.
Radiator	Young Radiator Company
Thermostat, Engine	Detroit Lubrication

MERCEDES-BENZ

DIESEL ENGINES HELP MAKE WEATHER ON WHEELS

Thermo King units, powered by Mercedes-Benz diesel engines, maintain constant temperature, from sub-zero to hot—irrespective of outside environments. There are models for truck trailers, piggy-back trailers, railroad cars or unitized containers. Shown is the new undermount truck-trailer unit, Model UWD.



Thermo King Corporation, "World Leader in Transport Temperature Control," has particularly critical requirements for their operating engines, to assure top-condition deliveries of perishable cargoes.

"They have to be light and compact, fume-free, fully adaptable to our heating-cooling equipment, and—naturally—economical to operate," says M. B. Green, Thermo King Executive Vice President.

"Mercedes-Benz engines meet our needs to a 'T.' These units give us the utmost in economical and dependable diesel power.

"Moreover, we have found that the Mercedes-Benz name and reputation have given additional sales appeal to our product."

MERCEDES-BENZ DIESEL ENGINES – A PRICE-QUALITY STANDARD SECOND TO NONE

SOLE IMPORTERS FOR THE UNITED STATES AND CANADA:

DAIMLER-BENZ OF NORTH AMERICA, INC.

INDUSTRIAL DIVISION

126-56 NORTHERN BLVD., FLUSHING, LONG ISLAND • TEL: JUdson 2-7100

DISTRIBUTORS AND DEALERS IN MAJOR MARKETS

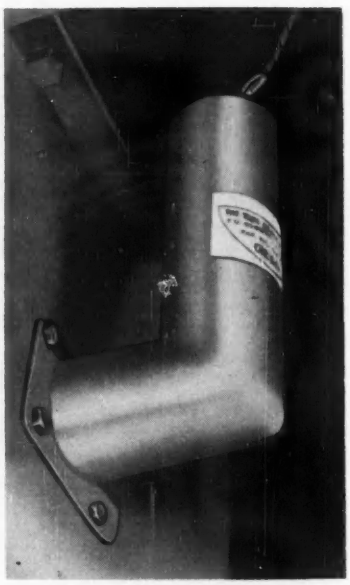
DAIMLER-BENZ OF NORTH AMERICA, INC. IS A WHOLLY OWNED SUBSIDIARY OF DAIMLER-BENZ A. G. OF STUTTGART, GERMANY

For more information write in No. 20

diesel power » new products

New Turbo For 500-hp Diesels . . .
Garrett's AiResearch Industrial Division has come up with a diesel turbocharger designed especially for 500-hp (and above) vehicle engines. Custom-tailored for engines powering vehicles, T-24 is a bigger version of the familiar rugged AiResearch turbo. Reports indicate that T-24 achieves top efficiency over broad power ranges, especially at low speeds for excellent lugging.

38



Checks Crankcase Oil Level Continuously . . .
Continuous indication of oil level in your crankcase is possible with a control panel-mounted "Sure Oil Level Gauge" developed by Sure Gauge & Lock Company. Designed for operation in any internal combustion engine . . . with 6 or 12-volt systems . . . or on 110-volt systems with transformers. Easily installed . . . tells when your engine is losing oil too rapidly, tells you even before oil pressure is affected. Lets you shut down before serious damage results!

39

Use your dp Reader Service Card.

MORE NEW PRODUCTS FOLLOW ►

Special Cam Lube Stops "Dry" Run-ins

Hi-Ball Cam Lube has been developed to prevent scoring, scuffing and excess wear during the waiting time while your engine runs "dry". Engine rebuilders and overhaulers are using Hi-Ball to prevent cam lobe wipe off . . . to permit proper mating of lobe and tappet until your oil pump delivers oil to these critical areas.

Headaches involved when installing a new or replacing an old cam (due to higher valve spring pressure, reduced surface area etc.) can be prevented by the use of Hi-Ball Cam Lube. It's a specially prepared compound designed to prevent metal-to-metal contact . . . counteracting galling and seizing at pressures well above 100,000-psi. Effective up to 1100°F.

40

Keeping It Clean Is No "Soap Opera"

It takes more than a fast-talking, smooth commercial to clean your Diesel! So, for the old problem, here's a new solution in the form of Oakite 202.

This new diesel product is easy to use . . . a liquid that mixes with water instantly, cuts through accumulations of road film, bug juice, oil, light carbon. No fire hazard involved. Spray, mop or brush it on . . . (only brush the stubborn areas.) A high pressure rinse does the rest . . . without spotting or streaking. Easy on equipment surfaces, too, and safe for aluminum, stainless steel, paint, plastic, decals.

41

Some NEED It HOT!

With the increasing demand for high-temperature seals in hydraulic actuators, Gits ushers in the Hi-Temp Ring Seal developed for use at temperatures from — 425° to 1500°F.

Designed as a unit, the all-metal construction comprises a metal lip of special design and configuration, fastened in a stainless steel ring. The ring is specifically designed to support the lip in axial direction and to prevent blowout under extreme pressures.

42

Suspect A Crack?

United States Casting Repair Corp. has developed a new Magnetic Crack Detector that's capable of detecting sub-surface as well as surface cracks, flaws and defects in any ferro-magnetic metal. Model S-20 seal lock is completely portable, weighing only 30-lb. It can be operated from a normal 110-volt ac source or from an ordinary truck or auto battery. Units are available for operation from any other ac or dc voltage. Ideally suited for detecting cracks in engine blocks, cylinder heads, shafts, machinery and small parts. Easily operated by one man with no special training required. Inspected results are always uniform since operation is not effected by temperature or humidity. The complete unit including probe, connectors, sprinkling bulbs, grey and yellow powder, is contained in a steel case.

43

The World's Largest Manufacturers of

FUEL INJECTION EQUIPMENT

for Diesel Engines

Depots and Service Agents in over 100 countries.

C.A.V.

FUEL INJECTION EQUIPMENT DIVISION OF

LUCAS ELECTRICAL SERVICES, INC.

Head Office: 501 West 42nd Street, New York 36
Sales Office: 14820 Detroit Avenue, Cleveland 7, Ohio
West Coast: 5025-29 W. Jefferson Blvd., Los Angeles 16, California
Branch Offices: 171 Beacon Street, South San Francisco, Calif.
5001 West Belmont Avenue, Chicago 41, Illinois
400 South Edgewood Avenue, Jacksonville, Florida

Canadian Distributors:
Joseph Lucas (Canada) Ltd. *Head Office:* 11 Davies Avenue, Toronto 8, Ontario
Branch Office: 3401 St. Antoine Street, Montreal 30, Quebec

AP 930

For more information write in No. 21

T-18 Turbocharger, A Natural for Diesel Power Plants

AiResearch Industrial Division of the Garrett Corporation has developed the Model T-18 turbocharger as part of its expansion of activity in the area of diesel engines with very high response rate.

The low inertia T-18 is designed for diesel power plants in the 220 to 500-hp range, fast becoming a "favorite" in trucking and earth-moving. T-18 offers an efficient combination of fast response, higher pressure ratios and improved durability. It's compact, too, with a housing diameter of 10.4 in. and weighing only 43-lb.

One basic type provides a flow range for controlled turbocharger applications; the other is tops in efficiency for free-floating applications. Safeguard features make for improved durability . . . minimum operational abuse.

44

Generator Control Panel Simplified By Simplex

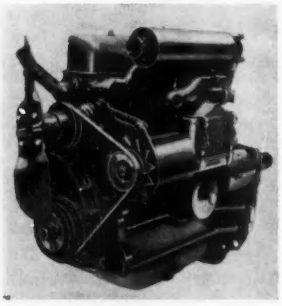
If you're setting up small or medium-size generators, there's an easy solution to your control problem. The new Simplex Modular Panel System solves your set-up problems, takes care of everything from automatic engine starting to voltage regulation. Completely flexible, there's over 250 stock instruments and control modules available in configurations to fit your particular requirements. Simplex Company has simplified generator control with a good, sound system that can handle your 10 to 300-kw problems.

45

Any Muffler Scars on Your Arms?

Well, if so—universal installation is featured in the new "Safe-T-Guard" Diesel Stack Muffler Protective screen recently developed by Alexander-Tagg Industries, Inc. Requires no special tools and is available in kit form—kit containing the necessary brackets and directions so that the screen may be installed easily on 7, 8, 8½, and 9-in. diameter mufflers. You can install 'em it is said in a matter of minutes.

46



Ford Offers New Diesels

Ford Division's Industrial Engine Department has added two new industrial engines to its lineup of heavy-duty engines and power units.

One is a 172 cu in. four-cylinder diesel with parts interchangeable with Ford's 172-cu in. gasoline engine.

The department now offers three diesel engines for use in construction, industrial agricultural, logging, material handling, mining and oilfield equipment.

47

Use your dp Reader Service Card.

Accumulators offered by new company

A complete line of hydraulic piston accumulators, integral part of hydraulic systems such as front end loader and dozer blade controls has been introduced by Hydrodyne Industries.

The new company supplies accumulators for such industries as: automotive, ground support, road and farm machinery, and wherever fluid power is used.

Louis B. Haberman, president of the new company has had considerable experience in the field, having been associated with Greer Hydraulics and Narda Hydraulics Corporation. He's responsible for the development of the three "O" ring piston accumulator which the new company will manufacture and distribute. Range of sizes covers 10-cu in. to 23-gal pressures up to 10,000-psi; temperatures up to 400°F.

48

Borg-Warner's New Hydraulic Gear Pumps

Hydraulic gear pumps, greatly simplified in design and engineered for longer life and higher performance are now available from Wooster Division of Borg-Warner Corporation. These new pumps utilize a design refinement and extension of the pressure-loading principle. Pump permits pressure from the outlet port to be diverted behind the rear bearings to reduce clearance between bearing faces and gears for optimum volumetric efficiency at all speeds and pressures.

B-W's new line consists of five series of pumps with four displacement variations in each series, giving a total of 20 standard pumps. All are available with either side or end porting (or a combination of these), and with standard S.A.E. mounting flanges and drive shafts. Capacities from the smallest to the largest series range from .7-gpm to 140.0 gpm at 2000 rpm and 2000 psi.

Possible applications? Hydraulic power for bucket loaders, fork lifts and similar industrial equipment, agricultural implements, and earth-moving equipment

49

New Application Ease For Magnaflux

A new development by Magnaflux Corporation is the convenience of magnetic particle inspection materials available in pressurized spray cans and plastic squeeze-bottles.

49-A

Spray . . . And Away We Go!

Just to make sure, look into Wilco's new SureFire Motor Starting Fluid. It's been developed for diesel and gasoline engines to insure quick smooth starts. Suited to heavy equipment, including trucks, farm tractors, graders, dozers, marine engines, pumps, etc., the fluid is sprayed directly into air cleaner or intake air system for five to ten seconds. Saves wear and tear on batteries, ignition systems and NERVES! Works effectively in temperatures to 65° below zero. An 11-oz spray can, it's claimed, is good for 35 to 50 starts.

50

these cards will bring you more information!

1 Simply note the numbers under advertisements and editorial items which interest you.

2 Then, write the numbers in the boxes on a card at right.

3 Fill in your name and address. Check off type of work you do.

4 Mail the card. We will pay postage and see that the information you requested is sent to you.

Use your dp Reader Service Card
For Additional Detailed Product Information

diesel power
AUGUST 1960
(Use before Sept. 30, 1960)

PLEASE PRINT READER SERVICE NUMBERS HERE

I'd like more information on following article:

NAME _____ TITLE _____

COMPANY OR ORGANIZATION _____

STREET _____ CITY _____ ZONE _____ STATE _____

My Business Is

- ☐ Construction & Earthmoving
- ☐ Petroleum, Production & Pipeline
- ☐ Highway Transportation
- ☐ Railroad Transportation
- ☐ Lumber & Logging
- ☐ Mining & Quarrying
- Other (explain) _____
- ☐ Municipal Power Plant
- ☐ Utility Power Plant
- ☐ Consulting Engineering
- ☐ Engine or Equipment Manufacturer
- ☐ Engine or Equipment Distributor
- ☐ Engine or Equipment Service and Repair

FIRST CLASS
Permit No. 638
Stamford, Conn.

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN U.S.

postage will be paid by:

DIESEL POWER
PUBLICATIONS, INC.
80 lincoln avenue, stamford, connecticut

don't wait for a pass-along copy of

diesel power

Start your subscription Today!

yes

please start my subscription to **diesel power**

FOREIGN

☐ 2 years — $7.00
☐ 1 YEAR AT $4.00
☐ I enclose $ _____

☐ 2 years — $13.00
☐ 1 YEAR AT $8.00
☐ Bill my company

NAME _____
TITLE _____
FIRM _____
TYPE OF BUSINESS _____
STREET ADDRESS _____
This is my home address ☐ Office address ☐
CITY _____ ZONE _____ STATE _____

dp

FIRST CLASS
Permit No. 638
Stamford, Conn.

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN U.S.

postage will be paid by:

DIESEL POWER
PUBLICATIONS, INC.
80 lincoln avenue, stamford, connecticut

Use your dp Reader Service Card
For Additional Detailed Product Information

diesel power
AUGUST 1960
(Use before Sept. 30, 1960)

PLEASE PRINT READER SERVICE NUMBERS HERE

I'd like more information on following article:

NAME _____ TITLE _____
COMPANY OR ORGANIZATION _____
STREET _____ CITY _____ ZONE _____ STATE _____

My Business Is

- ☐ Construction & Earthmoving
- ☐ Petroleum, Production & Pipeline
- ☐ Highway Transportation
- ☐ Railroad Transportation
- ☐ Lumber & Logging
- ☐ Mining & Quarrying
- ☐ Municipal Power Plant
- ☐ Utility Power Plant
- ☐ Consulting Engineering
- ☐ Engine or Equipment Manufacturer
- ☐ Engine or Equipment Distributor
- ☐ Engine or Equipment Service and Repair

Other (explain) _____

FIRST CLASS
Permit No. 638
Stamford, Conn.

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN U.S.

postage will be paid by:

DIESEL POWER
PUBLICATIONS, INC.
80 lincoln avenue, stamford, connecticut

these cards will bring you more information!

1 Simply note the numbers under advertisements and editorial items which interest you.

2 Then, write the numbers in the boxes on the card.

3 Fill in your name and address. Check off type of work you do.

4 Mail the card. We will pay postage and see that the information you requested is sent to you.

don't wait for a pass-along copy of

diesel power

Start your subscription Today!

Low Cost Dieselpak Developed

A new low cost oil filter replacement pack has just been designed for diesel truck operators whose maintenance schedules call for frequent oil and pack changes.

Luber-finer calls this one Regular Dieselpak and it will be used where the longer pack life and value of Imperial Dieselpak cannot be used to advantage.

Regular Dieselpak is smaller in diameter, contains less patented media than the Imperial. Other economies in design and a new field-tested laminated cellulose cannister, allow for a low initial cost. It's expected that under normal over-the-road diesel truck operation, the new Pack will give 4000 to 7000-miles of superior filtration. Now available only in 750 size, but others will soon be on the market.

51

Aid to Automation . . .

New concept in control systems for automatically starting, loading and shutting down internal combustion engines has been announced by the Fulton Sylphon Division, Robertshaw-Fulton Controls Company. R-F now offers complete pneumatically actuated control systems incorporating safety functions to signal or to shut down the engine due to malfunction of any one of an unlimited number of measurable variables. Sequence starting and stopping functions include specific steps as required by the individual engine installation. All start and stop functions are controlled in sequence and completely interlocked. Developed specifically to meet the requirements of gas compressing applications, wide industrial application to automated processes is envisioned by R-F.

52

It's The "Hole In The Middle" That Does The Trick!

A new lubricant container, developed by Alpha-Molykote, stores and protects its own applicator-brush, preventing contamination of greases with dirt and other abrasive materials. This special plastic jar features a well in the center that stores the brush free from possible contaminants when the cap is replaced.

A synthetic rubber washer seals the jar proper when the cap goes on, and a concentric fiber washer prevents the grease from entering the brush storage well. Carry it in any position. There's no danger of leakage or brush contamination.

With the brush securely attached to the cap, you've a convenient brush handle . . . your hands remain clean, and the jar's storage well discourages you from laying it down "just anywhere".

The jars contain 10-oz of Molykote G, the well known lubricant compound for tough friction and wear problems.

53

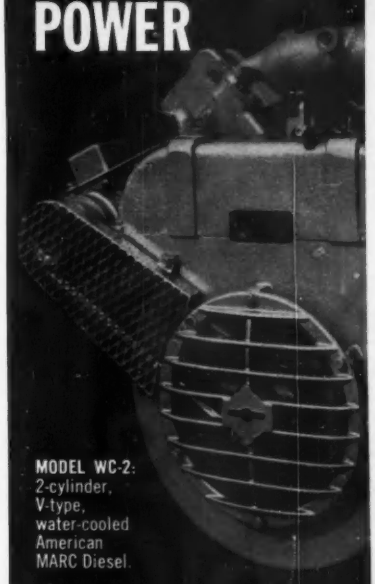
Use your dp Reader Service Card.

Dial-A-Slope Speeds-Up Grading

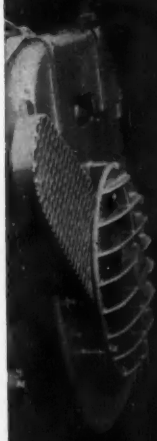
Preco's "all-transitor" Dial-A-Slope automatic blade-control is now available for installation on the LeTourneau-Westinghouse line of motor graders. Through the use of this new accessory it is claimed that every phase of operation, from roughing in to finishing, the productivity of the motor grader can be increased up to 50 percent! Operator's job is made easier, since the automatic control frees him from the necessity of constantly adjusting both left and right blade lift levers in order to maintain the proper degree of transverse blade slope. With the Dial-A-Slope control in operation, the operator need only watch one end of the blade and operate the lift lever which controls it—other end automatically takes care of itself, maintaining the blade slope the operator has "preselected"! Result is, operator can concentrate his entire attention to steering and regulating his depth of cut.

54

FROM EVERY ANGLE... DEPENDABLE POWER



MODEL WC-2: 2-cylinder, V-type, water-cooled American MARC Diesel.



Power for the long run or immediate stand-by with absolute dependability. That's American MARC... specializing in the development and manufacture of diesel engines, generators and generator sets of the highest quality and reliability. Engines from 9 to 28 HP. Generators from 500 watts to 100 KW. Standard Generator Sets from 3 to 10 KW. Other equipment to your specifications.

Write, wire or 'phone for complete information.

AMERICAN MARC INC.

phone: ORegon 8-7174

1601 West Florence Avenue, Inglewood, Calif.

For more information write in No. 22

diesel power new literature

Put it to a Test!

MAGNAFACTS in its Spring issue continues to illustrate the methods and advantages of nondestructive flaw detection in manufacturing and maintenance.

For greater economy, consistent quality, increased safety . . . testing by means of magnetic particle and dye penetrant is important to value analysis.

55

Affording Maintenance At Less Cost
. . . Specializing in REPLACEMENT Parts for CUMMINS ENGINES . . .

- Gears
- Injector Parts
- Fuel Pump Parts
- Fuel Lines
- Cylinder Heads
- Valves, Seats, Guides & Springs
- Pistons, Rings & Sleeves
- Camshafts
- Water Pump Parts
- Rocker Housing Assemblies
- Rocker Parts
- Push Rods
- Cam Follower Parts
- Hose Assemblies

Pacific DIESEL Parts Co.

4650 E. Florence Ave., Bell, Calif.
Mail Address—P.O. Box 1007
LUdlow 1-6082

For more information write in No. 23

For more information write in No. 24

USE BELL INJECTOR CUPS

FOR THE LEADING TRUCK DIESELS
Years of proven service
Volume production on automatic machines means SAVINGS
We pass this on to the consumer
Sold by all parts houses

BELL DIESEL RESEARCH
Pioneers in research and manufacture of high speed diesel injection equipment.
P.O. Box 842, Glendale 5, Calif.
Telephone: Citrus 1-4721

For more information write in No. 25

ARREST THAT - - - Wear and Tear!

Lubricating Engineers, Inc. has published a second edition of an 8-page 2-color brochure describing the wear resistant qualities of Almasol, gear and bearing lubricants.

Almasol, a new lubricative pigment, with tremendous load-carrying strength, low coefficient of friction, and a natural affinity for metals, has the ability to retain it all at temperatures up to 1900° F.

"Almasol Gear and Bearing Lubricants" booklet has the low-down on this ingredient, exclusive with LE.

56

A Real Sleuth! Branson Flaw Detector Described

Take a look at Branson Instrument's new Bulletin T200 and check up on the job the Sonoray* five flaw detector can do! Looking for flaws in shafts, castings, machinery parts? Turn to this ultrasonic flaw detection for the answer. Compact, portable, lightweight. No radiation hazards, either.

The booklet reviews the techniques and applications. There's a good specification chart, too.

* Trademark

57

Diesel Model in New Allis-Chalmers "F" Series

Allis-Chalmers has published a new 8-page catalog describing the new "F" series lift trucks in 3000, 4000 and 5000-lb capacity ranges. The 3000-pounder is offered with a new Model D-175 diesel . . . complete with all the diesel advantages, fuel economies and fine performance.

58

"Handy" tools featured in new OTC catalog

A new 16-page, two-color catalog handily describes the variety of hand tools in the Owatonna line. Catalog H-9's got 'em all . . . wrenches, pliers, cutters, screw drivers, punches, chisels, sockets, handles, extensions, socket sets, tool sets, chests, feeler gauges and the like. Descriptions are as precise as the tools!

59

Reach for this pipe-cleaner data!

Easily installed, designed to fit any filter, Air-Maze Corporation's pipe line strainers are described in detail in a comprehensive 2-page data sheet just published.

The strainer units which remove the many contaminants present following the initial installation of equipment are also available for use when original flanges are not conveniently located. They're constructed with steel hardware and phosphor bronze media; phosphate coated after assembly. The maximum operating temperature is 250°F.

60

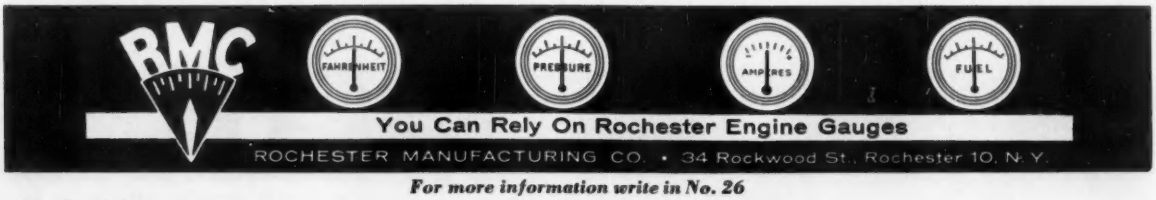
Catalog Features Steel Spring Machinery Mounts

The Korfund Company's just published a completely new 6-page catalog with all the latest on vibration, shock and noise control through the use of steel spring machinery mountings.

Bulletin K3C, states the case for steel springs through a series of typical "histories", complete with installation photos showing how a representative range of vibration problems was solved.

Capacities and characteristics of the Series "L" Vibro-Isolator are furnished with specifications and easy-to-read tables.

61



For more information write in No. 26

Quiet, Please!
Lord Products Guide Tells HOW

Eight illustrated pages tell you how to select the right bonded rubber mounting or flexible mounting systems—systems tailor-made for such industries as truck, automotive, marine, construction equipment, ground support equipment, rail roads, missile, electrical, etc.

Lord Manufacturing, producer of vibration, shock and noise control equipment, lists the whole story in Bulletin #905, "Lord Product Guide." Notes are made of other available Lord literature, too. The well illustrated booklet includes general design, application and performance data for 22 product series.

62

Use your dp Reader Service Card.

A "Drum" is NOT to BEAT!

No, not really, nor is a "patch" to mend! The language is beyond the dictionary . . . and electronic "brain" computers are extra-curricular too! Engineers and management look to these electronic monsters, though, to perform efficient, monumental computations "on the double."

This booklet, "Do you Talk Computerese?" explains how a process control computer functions. But, according to Brown Instruments Division of Minneapolis-Honeywell Regulator Co., you have to "savvy" the lingo, first. The 22-page glossary, amusingly illustrated in cartoon style, defines 82 terms you can use with reference to the computer, and nary a soul listening in beside the instrument producer's own engineers will understand a word that you're saying!

Honeywell expects this glossary to take a prominent place beside its "Automation Dictionary" issued five years ago. It's the perfect adult answer to teen-age jive talk. For that alone, it's worth a look-see!

63

Construction Equipment By Ford Illustrated

"Ford Tractors, Equipment for Construction" is a new 4-color 16-page booklet illustrating the Ford line of tractors and industrial equipment, much of it diesel-powered.

A check-list of described machinery includes: loaders, backhoes, dozers, earthcavators, fork lifts, cranes . . . to be used for heavy and light excavating; heavy and light loading; scraping, leveling and grading; lifting, towing and general utility.

64

For that "New Look", SPRAY IT!

The new Colmonoy* Model D Spraywelder is reviewed in its many aspects in a new 4-color bulletin published by the Wall Colmonoy Corp.

Listing its advantages for new or reclamation hard surfacing, it also contains a step-by-step outline discussion of the Sprayweld process.

For equipment parts that take a real beating . . . where a smooth finished surface is a must, the Spraywelder and the five Colmonoy alloys available as Sprayweld powders can produce the desired finish. Saves time, money. Saves trouble too. No hunting down replacement parts.

A ready reference chart identifies composition, hardness, application recommendations, etc.

* Trademark

65

Accessories Broaden . . .

(Continued from page 27)

nylon control tube, a control wire inside and a control piston at the end.

When the control lever is fully depressed, the starter switch is operated and the control piston, pushed inward, holds the shut-down lever away from the governor linkage hook. Upon a start, the control lever is raised slightly to open the starter switch. The lock-out control is held depressed until lube oil pressure builds up enough to take over and prevent engine shutdown.

Magnetic Retarder—The pump's timing advance is controlled by fuel oil supply pressure. Ordinarily, transfer pump pressure at cranking speeds is not sufficient to advance the cam. However, in cold weather, fuel viscosity may be high enough to permit the pressure buildup needed to advance the cam. This makes starting difficult. The magnetic retarder overcomes this possible condition by magnetically holding the power piston in the "retarded" position.

Summarizing . . .

These six new devices are "tools" to broaden application of diesels using these fuel injection pumps, particularly when automatic operation is involved. Made to work with the pump, they can be used as needed in different combinations for more effective control—plus engine protection.

For more information write in No. 27

SIMMS MOTOR UNITS LTD

the British Manufacturers of world-famed Diesel Injection and Electrical equipment announce the appointment of

DIESEL INJECTION SALES & SERVICE

INCORPORATED

808, UNION STREET, NORFOLK, VA (Phone MA.2-3103)

as their Major Agent in the U.S.A. with the following Central Distributors:-

BOSTON, Massachusetts, W. J. Connell & Co., 210 Needham Street, Boston, 64

BROOKLYN, New York, A & D Diesel Service, 145 21st. Street, Brooklyn, N.Y.

CHICAGO, Illinois, Illinois Auto Electric Co., 2011 S. Indiana Ave., Chicago, 16

DETROIT, Michigan, Knorr-Maynard Inc., 5743 N. Woodward Ave., Detroit, 2

HOUSTON, Texas, Magneto Diesel Injector Service, 6931 Navigation Blvd., Houston, Texas

JACKSONVILLE, Florida, Patten & Sales Co. Inc., 1031 Hogan Street, Jacksonville, Florida

MESA, Arizona, Perkins Diesel Service, 747 So. Country Club Drive, Mesa, Arizona

MINNEAPOLIS, Minnesota, Diesel Service Co., 2509 E. Lake Street, Minneapolis, 6

NEW ORLEANS, Louisiana, Gerhardt's Inc., 819 Central Ave., New Orleans, La.

PHILADELPHIA, Pennsylvania, Philadelphia Diesel Inc., 2520 N. Orthodox Street, Philadelphia, Penna.

RALEIGH, S. Carolina, Diesel Injection Sales & Service Inc., 3015 Hillsboro Street, Raleigh, S.C.

ST. LOUIS, Missouri, Diesel Fuel Injection Service Inc., 9331 So. Broadway, St. Louis, 23, Missouri

SALT LAKE CITY, Utah. Diesel Electric Service & Supply Co., 652 W. 17th Street S., Salt Lake City, Utah

SHREVEPORT, Louisiana, Vaughan & Bush Inc., 164 No. Market Street, Shreveport, Louisiana

SPOKANE, Washington, Spokane Diesel & Electric Co., 704 E. Pacific Ave., Spokane, Washington

WILMINGTON, California, Diesel Control Corporation, 226 N. Marine Ave., Wilmington, Calif.

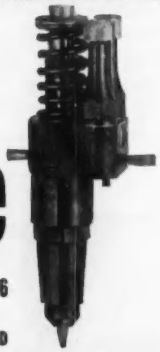
Simms

For more information write in No. 28

ADVERTISERS INDEX

Adeco Products, Inc.	16
American MARC, Inc.	47
Bacharach Industrial Instrument Co.	16
Bell Diesel Research	48
Bendix Corporation, Scintilla Div.	2
C.A.V., Ltd.	43
Clark Equipment Co.	31
Cooper Bessemer Corp.	2nd Cover
Daimler-Benz of North America, Inc.	41
Fairbanks, Morse & Company	6, 7
Garrett Corp., AiResearch Div.	8
Harrison Radiator Div., G.M. Corp.	4
Hartford Machine Screw Co.	3rd Cover
International Harvester Co.	3
International Nickel Co., Inc.	10
Interstate Diesel Service, Inc.	50
Kent-Moore Organization, Inc.	39
Kiene Diesel Accessories, Inc.	17
Lix Corporation	17
Luber-Finer, Inc.	21
National Forge Company	13
National Marine Service, Inc.	15
Pacific Diesel Parts Co.	48
Rochester Manufacturing Company	48
Sealed Power Corporation	4th Cover
Shell Oil Company	25
Simms Motor Units, Ltd.	50
Sticht, Herman H. Co.	48
Sturtevant, P. A. Company	49
Wilkening Manufacturing Co.	1
Witte Engine Works, Div. U. S. Steel Corp.	37

we do 1 thing - and we do it very well!



Interstate

diesel service incorporated
2093 East 19th St., Cleveland 15, Ohio • PR 1-7726

PRODUCTS SOLD THROUGHOUT U. S. AND CANADA BY DEALERS AND DISTRIBUTORS — INQUIRIES WELCOMED

America's largest GM fuel injector rebuilder

For more information write in No. 29

SIMPLICITY
in the Heart of the Modern Diesel Engine

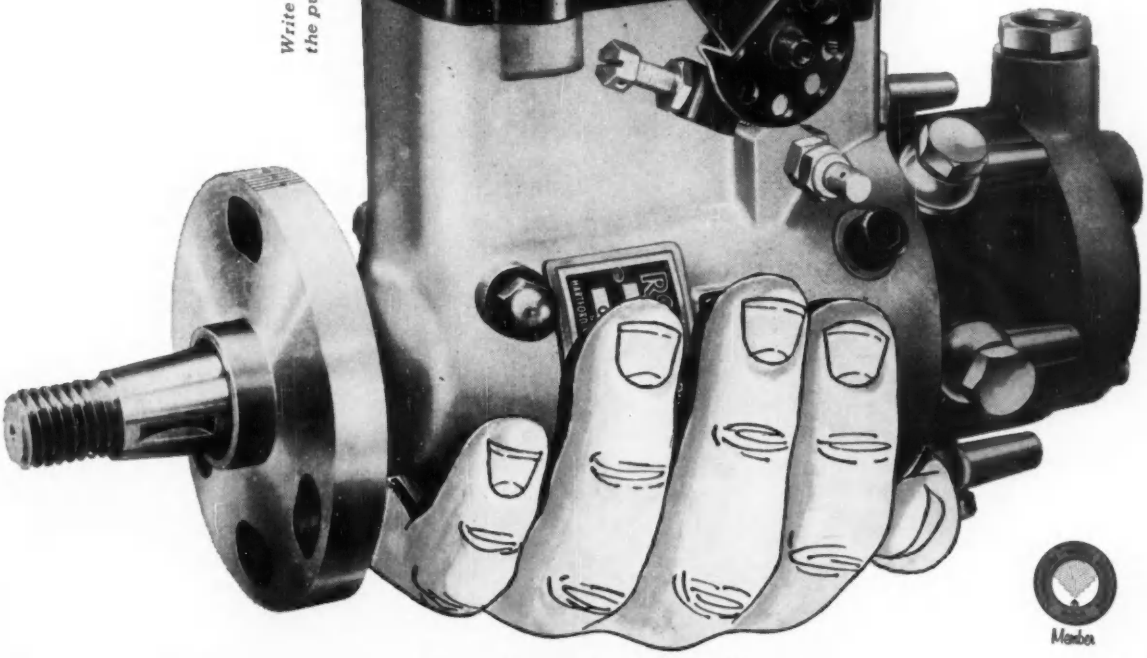
Simple—Only 8" long, 3¼" wide, 5½" high . . . weighs less than 10 pounds . . . fewer parts to service, fewer adjustments to make.

Versatile—Because of accessories that can be built in or added at low cost taking up no, or very little, valuable engine block space.

Economical—Initial cost is less, costs less to service, saves money because of its dependable service.

HMS makes good diesels better

ROOSA MASTER



Write for guides to better fuel injection. One features the pump, the other an efficient, economical filter.

HARTFORD MACHINE SCREW CO., HARTFORD 2, CONN.
Division of Standard Screw Company

Mesbo

For more information write in No. 30

Sealed Power *Stainless Steel*

A remarkable oil ring material for lightweight diesel applications

In experimenting for a superior oil ring material for automotive applications, Sealed Power engineers were intrigued with the use of stainless steel for certain diesel applications. Put to the test, the stainless steel oil ring proved out in both design and material.

The expander (being of stainless steel) resists the pitting and etching effects of the gases of internal combustion engines. The surface stays clean and smooth; return oil vents don't plug.

Stainless steel has no significant tension loss at engine operating temperature. This means the expander continues to exert the proper, predetermined pressure on the side rails. They, in turn, maintain the proper sealing action against cylinder walls far longer.

Other key features: proper cylinder wall conformability • quick seating • chrome-plated side rails for long life • easy assembly and installation.

Sealed Power

Preferred Performance through Engineering and Research

SEALED POWER CORPORATION, MUSKEGON, MICHIGAN • ST. JOHNS, MICHIGAN • ROCHESTER, INDIANA • STRATFORD, ONTARIO • DETROIT OFFICE • 7-236 GENERAL MOTORS BUILDING • PHONE TRINITY 1-3440

PISTONS • PISTON RINGS • SLEEVES • SLEEVE ASSEMBLIES • SEALING RINGS FOR ALL APPLICATIONS

For more information write in No. 31